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SECTION OF LARYNGOLOGY AND OTOLOGY.

A. BROWN KELLY, M.D., D.Sc., President.

DISCUSSION ON THE AFTER-TREATMENT AND RESULTS OF THE SIMPLE AND RADICAL MASTOID OPERATIONS.

OPENING PAPERS.

I.—GEORGE J. JENKINS, F.R.C.S.,
Aural Surgeon, King's College Hospital.

THE SCHWARTZE OPERATION FOR ACUTE MASTOIDITIS: AFTER-MANAGEMENT OF THE WOUND.

THE selection of a title for this paper presents some difficulty, as for the moment we are concerned, not with the actual operation, but only with the after-treatment of the wound. No doubt some of us may contend that this depends on the details of the operative procedure, but I think that for the basis of the discussion we must assume that the operation has been done with meticulous care, and that all diseased tissues have been removed.

Whatever method of treatment is adopted, the primary object should be the prevention of an extension of the septic process. It is, however, important to consider how the ear may be left as near normal as possible, and how both these objects may be attained with the least loss of time. Let us in the first place have a clear understanding as to the purpose of the operation. It is a general rule in surgery that a pyogenic abscess or a septic region should be drained as freely as possible, as it has been found that, unless the whole of the affected part can be removed, efficient drainage is the best preventive in our power against extension of the inflammation. As to how long the drainage should be maintained, this seems to depend upon the relation of the degree of resistance of the patient, to the virulence of the infection, and also upon the time required for permanently damaged tissue to be absorbed or thrown off. Thus we find a single tapping of an abscess may be sufficient to promote recovery, whereas in other cases efficient drainage may have to be maintained over a long period.

It seems to me that what we have chiefly to consider is the application of this principle to the treatment of the operation wound in acute mastoiditis. In this condition the region infected includes, in a majority of cases, the nasopharynx, Eustachian tube, tympanic cavity, mastoid antrum, and possibly an extensive system of cells in the mastoid. When the middle-ear tract has been infected we dread the dangers of an extension of the infection beyond the mucous membrane, and for this reason we establish drainage. By the Schwartze operation we remove, as far as possible, the damaged tissues behind the aditus, but at the same time we should make quite sure that the tympanic cavity is sufficiently drained either by spontaneous opening or by paracentesis. It is also important to deal with all systems of cells in the mastoid, including those which may not appear obviously infected. The position then will be that behind the aditus the whole of the diseased tissue will have been removed, and there will be sufficient drainage of the tympanic cavity. The walls of the mastoid wound, no matter how carefully cleaned, or what antiseptics are used, must be regarded as infected with an organism which has been responsible for the acute mastoiditis and is capable of causing still further extension of disease, in spite of the resistance of the individual. The object of this paper is to direct your attention to the after-management of this septic wound.

Primary Suture.

It is well known that many septic wounds after careful cleaning, and with or without the use of antiseptics such as iodoform or bipp, can be closed and primary healing occurs, though even when the greatest care is taken this procedure sometimes fails. The same principle is seen in the occasional recovery after a simple puncture of an abscess. We know also that the tissues are capable of dealing with a certain dose of organisms, this dose varying with the resistance to the organism in question. It is obvious, therefore, that if by some misfortune a massive dose is left in any part of the wound, or a smaller dose in a favourable situation, such as a blood clot, then a reinfection will occur and the wound will break down. In many parts of the body this may not be serious, or of sufficient moment to outweigh the advantages of primary union of the wound. In the particular region with which we are dealing such a recurrence of active inflammation may be a matter for grave concern. Since war experiences many of us have tried primary closure after the Schwartze operation. When considering the question of primary closure I came to the conclusion that there were certain extensive irregular cavities where the soft tissue could not be brought into intimate contact with the deep bony parts, and that in such circumstances primary suture was not likely to succeed and was unsafe. The only cases in which I have attempted this method of treatment have been those in which the cavity was of such a form that after cutting the bone edges away the soft tissues fell in contact with the bone, leaving only a comparatively small cavity near the meatal wall.

Two other considerations have influenced my procedure in this connexion: first, the general condition of the patient clinically, and secondly, the appearance and character of the purulent exudate. In cases where this was thin and watery-looking, suggesting an inadequate local resistance, I have not attempted primary suture. It is impossible, even with the aid of sterile iodoform or bipp, to be certain that the wound is sufficiently clean, or that reinfection from the middle ear will be prevented. Even in my selected cases primary suture without drainage has occasionally failed, and I have felt that the risk and disturbance to the patient was too great, and the result, even when successful, not always satisfactory. In some of the instances in which primary suture was successful the organization of the clot under the skin was evidently feeble, and the result in some cases was a large cavity thinly covered by skin, while in others there was very marked depression.

After-Treatment by Maintenance of an Open Wound.

This has been practised by using the whole or part of the mastoid incision, or by making another drainage wound into the meatus and closing the original wound. I propose to deal first with the latter of these two methods. It seems to me that an opening into the meatus cannot afford efficient drainage for a great many of the cavities following a Schwartze operation, since such an opening can only provide drainage for the immediate neighbourhood, such as the antrum and the antero-superior part of the mastoid cavity. From this it would appear that the only suitable cases for this method of treatment are those in which the wound cavity is small, and in these I cannot see any advantage in favour of meatal drainage over drainage from the lower part of the mastoid incision after closure of the upper part. In fact my experience teaches me that, even in selected cases, drainage from the lower part of the mastoid wound is more effective, and the healing is as rapid and is more under control; moreover, the dressing of the wound is less painful. I cannot help saying that I feel that the advocates of meatal drainage allow themselves to be biased too much by the pleasant appearance of a healed posterior incision, and are not sufficiently influenced by the sometimes unpleasant effects of meatal drainage. At times treatment of the meatal wound is difficult and painful—at least it has been in some of my own cases, in which granulations had to be treated and meatal dermatitis overcome. Occasionally, even when healing was satisfactory, the depression in the meatus caused trouble for some time afterwards. In short,

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middle-ear suppuration with good hearing in the affected ear, or to cases in which the "other ear" is very deaf, or at least more deaf than the ear to be operated upon. In many of these cases the perforation is in the attic region, or is a posterior marginal one; both are very frequently associated with cholesteatoma, so that a slight risk is incurred by omission to perform the complete operation. This risk is, however, justifiable.

Brühl does not favour the modified operation, and says that, since using the Bárány noise box to exclude the sound ear, he no longer finds "good hearing" in the ear to be operated upon. Further, he finds that patients in whom the "conservative" operation has been performed by others hear just as badly as his own "radical" cases.

I do not perform the modified radical operation in cases of acute middle-ear suppuration, as recommended by Mr. Heath, because I hold that the Schwartze or simple mastoid operation is more suitable. In most of these acute cases the diseased cells extend down to the tip of the mastoid, which lies at a lower level than that of the meatal floor.

TECHNIQUE.

Without a word or two about the technique of the operations under discussion, it is almost impossible to deal with the after-treatment and results, which depend to a very large extent on the operative methods employed. I will not onlarge on the necessity of removing the whole of the lateral wall of the antrum, aditus, and attic, of curetting very thoroughly the Eustachian tube, of lowering the bony floor of the meatus and the facial spur to the limits of safety, of removing the remains of the drumhead, including its tendinous attachment to the annulus, of removing polypi and granulations and curetting diseased areas on the inner wall of the bony cavity with due regard to the danger areas—the window regions. Two points, however, deserve detailed attention—namely, the meatal plastic and the immediate skin graft by Marriage's method.

Meatal Plastic.—Recently Bárány has omitted the meatal plastic, packing the mastoid cavity and leaving the post-auricular wound open for a period. Dan McKenzie and probably others have used a similar technique in this country. The object is to get rid of the tendency for collections of wax and cast off epidermis to form in the operation cavity. I have no personal experience of this method, but Dr. W. T. Gardiner tried it in one case, without success. Brühl does not favour Bárány's innovation. The objections to the method are that either the posterior wound would have to be left open and packed for a very long time or, if it were allowed to close, there would be a danger of the collection of pus under tension in the antrum. Brühl holds that Bárány's method will result in recurrences and further operation. My own preference is for the Körner plastic and a very large meatus; indeed, I usually excise a considerable piece of cartilage and stitch back the flap with a mattress suture. A large meatus not only facilitates inspection and after-treatment, but also tends to give a dry cavity. We have had very little trouble with perichondritis of the auricle. Brühl, after using the Panse and Stacke flaps for many years, has adopted, or readopted, Körner's method.

Skin Graft.—With regard to the primary skin graft I can confirm Mr. Marriage's claim that the operation cavity heals much more quickly, that the outline of the inner wall is preserved in almost all cases, that the first dressing is nearly painless and subsequent dressings are unnecessary, that the duration of the patient's stay in hospital is greatly reduced, that a dry and satisfactory cavity results in a larger percentage of cases than with other methods, and, finally, that the results as regards the hearing power are better than when the skin graft is omitted.

Modified Radical Mastoid Operation.—This procedure has several variations. After opening the antrum, we may remove only a small part of the posterior wall of the bony meatus; secondly, we may remove almost the whole of this wall, including part of the lateral wall of the aditus, exposing the short process of the incus and lateral canal prominence; thirdly, we may remove the incus (Sidney Scott); fourthly, we may take away the outer wall of the aditus and attic, exposing the body of the incus and head of the malleus: finally, we may or may not skin-graft the cavity. The choice of operation depends on the type of case with which we have to deal—for example, in cases with attic perforation and cholesteatoma it is advisable to do a "liberal-conservative" operation and to remove the outer wall of the aditus and attic, whereas in cases without attic perforation and cholesteatoma, a "tory conservative" operation may be all that is called for. In any case we must admit that the modified operation is rather less likely than the radical to yield a dry ear. I usually explain to the patient that the modified operation is to be performed to safeguard his hearing, and that it may be necessary to complete the radical operation at a later date. Brühl is against the modified operation, and believes that those who are now trying it will in a few years return to the radical. Only one out of eleven cases operated upon in his clinic according to Bárány's method was a success.

AFTER-TREATMENT.

In the great majority of cases which have been skin-grafted there is very little to be said about the after-treatment. I apply the graft to the bony surface at the time of operation, by means of a long string of iodoform worsted which is packed into the cavity. Other surgeons use different methods (Mosher). The case is dressed on the fourth or fifth day, the silkworm-gut skin stitches, including that retaining the meatal flap, are taken out, and the iodoform worsted packing is removed. As a rule there is no bleeding and no necessity to clean out the cavity. In most cases I put in fresh iodoform worsted packing and apply gauze wool, and a trefoil bandage for another two days. At the end of this period all dressings are omitted in the daytime and the meatus is left open. At night a piece of iodoform gauze is inserted into the meatus, and cotton-wool and a bandage are applied so as to avoid staining the pillow. The case is now treated morning and night as one of chronic middle-ear suppuration, by means of peroxide drops, syringing with lukewarm boric lotion or dilute lysol solution (half a teaspoonful to the pint), drying out with gauze strips and the instillation of spirit drops containing 10 grains of boric acid in each ounce. The superficial layers of the graft come away of their own accord and should not be forcibly removed. The patient is, as a rule, able to leave the ward in fourteen days, either for the convalescent house or for his own home. Cases are usually seen at the end of three weeks after leaving hospital. Almost the only trouble I have known in these skin-grafted cases is the formation of a small abscess at the lower end of the retro-auricular wound about a week or ten days after operation, the upper part of the wound remaining soundly healed. We must remember that the patient is lying in bed and that any discharge in the operation cavity gravitates to the lowest part. Further, if after cutting the Körner flap the vessel in the lower cut edge of the cartilaginous meatus requires a ligature, the catgut may form the starting-point of such an abscess. As a rule, however, the retro-auricular wound gives no trouble. This may be due to the fact that in Edinburgh we make the incision in the hair margin so that the wound is united over periosteum and bone and not over the operation cavity itself.

In cases in which a skin graft is not applied the after-treatment is more troublesome on account of the formation of excessive granulations which grow up from the facial spur and downwards from the cut edge of the attic and aditus and tend to form about the level of the isthmus a membrane which shuts off the deeper part of the cavity. Frequently this membrane has a small hole in it through which pus exudes. In several of these cases I have operated again, and on the second occasion have employed the skin graft with success.

Such applications as scarlet red in rectified spirit and brilliant green do seem to promote the early epithelialization of the operation cavity, though sometimes they cause irritation of the skin. Sometimes there is a tendency of the auricle to droop to a lower level than that on the normal side or to stand out further from the head. I do

I cannot myself see any advantage in meatal drainage. I have boldly made this statement because I feel it is a point on which there will be difference of opinion, and on which there should be discussion. I know it is the practice of not a few men for whom I have the greatest respect to use meatal drainage, and I would ask them to give clear and definite reasons for their preference for this method over the other.

We have now to consider a variety of treatments of the wound by drainage through the mastoid incision. The problem will vary with the conditions. At one extreme there will be a small smooth-walled cavity, of the dense mastoid, and at the other will be the large irregular cavity with tracks in various directions, and rough irregular bony walls. Sometimes the cavity is necessarily deep even at the edges, and at other times it is shallow. No two cavities are alike, and the appropriate treatment for each type must be considered. I do not think hard and fast rules can be drawn up for the adoption of any particular method; the operator must be influenced by the conditions present, and, apart from the extreme variations mentioned, there must be a difference of opinion in certain cases. The form of the cavity is not the only factor, as I am sure most of us would take into account the acuteness of the infection and the character of the pus, and also the general condition of the patient.

I now propose briefly to describe my ordinary practice. I syringe out all wounds, first with hydrogen peroxide (10 vols.) to remove finer particles of bone or tissue which may have escaped notice, and subsequently with some bland sterile lotion; all the walls are then lightly smeared over with sterile fine iodoform prepared as follows: iodoform in fine powder is soaked in absolute alcohol; the excess of alcohol is run off and the iodoform used as a paste. When there is a small well defined cavity, such as a simple gutter in the anterior part of the mastoid, it is my custom to stitch up the upper part of the incision, and to drain from the lower part of the wound. Two-inch ribbon gauze impregnated with iodoform is loosely packed in the part of the cavity below the antrum; there is a certain amount of room for the blood clot to form in contact with the walls of the cavity. The gauze is there merely to maintain an exit for septic exudate. At the subsequent dressing, about the third day, a similar gauze dressing, perhaps a little smaller, is placed in the wound, and fresh clot usually forms which sometimes organizes very quickly. It is often advisable, even for such a light dressing as this, to administer gas. Two or three rubber tubes in the place of the ribbon gauze make an equally satisfactory drainage system. The process of healing is commonly uneventful, and the resulting scar is not in any way objectionable.

When the wound is very large it is my custom in most cases to leave the whole of the incision open and to pack lightly all parts of the wound with iodoform gauze. Such a large packing necessitates gas anaesthesia for the first dressing on the third or fourth day. The wound is practically always healthy by this time, and the repacking is done much more lightly and less extensively. This method of treatment has not given me any cause for anxiety or regret, whereas simple drainage of the cavity from the lower part of the incision by means of tube or gauze has often resulted in general toxic effects. In some of the extensive cases, where the cavity is very shallow and other conditions are suitable, I allow the soft tissues to come into contact with the bony wall, but I always pack the lower and anterior part of the cavity. I am quite well aware that many of the cases treated as indicated above would heal by primary union, provided the middle-ear condition was satisfactory, but it is the odd case with serious disturbances resulting from reinfection that drives me to a method that has been proved safe and satisfactory, though it may mean a prolonged after-treatment.

If there is any serious delay in healing, or if there is a tendency for the epithelium to dip into the wound, I strongly advocate secondary suture, which very rarely fails if carefully performed. For this procedure I like to see the communication with the middle ear shut off, or almost completely closed; by this time a considerable part of the wound has been filled with granulations and the cavity is practically aseptic. My method is as follows. The cavity is thoroughly cleaned out with 2 per cent. solution of iodine. The edges of the wound are cut away back to healthy skin, the skin is undercut very widely and the flaps are made as thick as possible. The whole surface of the cavity is lightly smeared with iodoform, and the edges are brought together accurately without tension. The patient is able to go about in three or four days, and the wound is usually soundly healed in ten to fourteen days. Secondary suture gives the soundest scar and the best cosmetic result of any of the methods of treatment that I have tried, and also shortens the period of convalescence considerably.

I have not referred to the persistence of sinus or fistula, as in my opinion this condition is due to an imperfect operation, or imperfect treatment of the infection in the more anterior part of the middle-ear tract. Considerable delay in the healing of the Schwartze wound may be caused by a septic nasopharynx, and for this reason I often remove the tonsils and adenoids when for any reason a second anaesthetic becomes advisable. The main object of this paper is to direct your attention to certain differences of practice in the after-treatment of the Schwartze wound. You will discuss primary suture. Some of us contend that when primary suture fails there is a certain amount of gain. I personally feel that the disturbance and risk to the patient from the occasional secondary infection is too big a price to pay, and also I do not think the ultimate result satisfactory, even when there is primary healing. Again, you will consider meatal drainage—a method used by a number of men who have had large experience. I do not practise meatal drainage for the reasons given above. You will criticize the various methods of treatment of the cavity through the original mastoid incision, and also secondary suture.

In this discussion we shall be inclined to support those procedures that promise for the patient an easy convalescence and a rapid return to normal, but we should disapprove of any procedure that promises these benefits if it involves the least risk of sacrificing a small degree of safety.

II.—J. S. FRASER, M.B., CH.B.ED., F.R.C.S.ED.,
Surgeon to the Ear and Throat Department, Royal Infirmary, Edinburgh.

BEFORE considering the after-treatment and results of the radical and modified radical mastoid operations we must ask ourselves what objects we hope to attain by these procedures. The first and most important is to place the patient in a position of safety as regards life—that is, to free him or her from the possibility of an intracranial complication, or, as the modern slogan has it, "safety first." The subsidiary objects are to stop the aural discharge, and to improve, or at least retain, the hearing in the affected ear. In twenty years Dr. Logan Turner and I have known of only one case in which an intracranial complication occurred in a patient who had had a radical mastoid operation, but we have known of several in which a patient suffering from chronic middle-ear suppuration, without any acute symptoms, came for examination, had his name entered on the waiting list, and had to be taken in as an urgent case of intracranial complication before his turn came for admission.

INDICATIONS.

The indications for the operative procedures under consideration do not come officially within the scope of this paper. I do not intend to say anything about the indications for the radical mastoid operation except that we must all admit that now and then we operate on a case in which we find at operation little or no sign of serious disease in the antrum, aditus, or attic. Many of these cases, attending as out-patients, ought to be cured by conservative treatment, including ionic medication. The difficulty is to get efficient conservative treatment in the cases of patients who live in the country. If we had sufficient hospital accommodation to admit these patients for two or three weeks it is probable that many of them would not come to the radical operation.

With regard to the modified radical operation, my practice has been to limit this operation to cases of chronic

could not be noted because the temperature charts had been lost, or the patient had developed scarlet fever or erysipelas and was transferred to the fever hospital. The period was 14 days or less in 108 cases (49 per cent.); 14 to 21 days in 74 (33 per cent.); over three weeks in 39 (only 18 per cent.).

II. *Radical Mastoid Operations without Skin Graft* (1919-1925 inclusive).—Of the 45 cases in this group the stay in hospital was noted in 41. The period was 14 days or less in 11 (27 per cent.); 14 to 21 days in 19 (46 per cent.); over three weeks in 11 (26 per cent.).

Modified Radical Mastoid Operations—with and without Skin Graft (1907-1925 inclusive).

A modified radical mastoid operation (either with or without skin graft) was performed in 80 cases during the period dealt with. The results were as follows: uneventful recovery in 55 cases; haemorrhage from the external meatus in 1; the posterior wound suppurated in 11; serous labyrinthitis with recovery, 2; slight cellulitis of auricle, 2; erysipelas, 7; surgical scarlet fever, 1; fatal result, 1. In this last case—a miner who had been injured in the pit and had much coal dust in the tissues of the auricle and skin of the mastoid, with, in addition, almost complete stenosis of the external meatus—erysipelas developed; the patient was transferred to the fever hospital and died there of septicaemia sixteen days after operation.

Of the 80 cases 48 reported for re-examination. (In the majority of the cases an immediate skin graft was applied to the mastoid antrum and cut edges of the bony meatus.)

Operation Cavity.—The cavity was epithelialized and quite dry in 26 (54 per cent.); the outline of the inner wall was retained but one or two small areas of moist pink mucosa were present in 16 (33 per cent.); there was therefore a satisfactory result in 87 per cent. Pus was present with swollen congested mucosa or granulations, polypi, and narrow meatus in 6 cases (12 per cent.). These results correspond very closely with those given by Mr. Donald Watson of Bradford,[3] who examined patients on whom the modified radical mastoid operation had been performed at the Royal Infirmary, Edinburgh. Mr. Watson found that out of 50 cases 25 were cured, 17 still had some meatal discharge, and 8 had come to the radical operation.

Hearing.—Of the 48 cases the hearing was improved in 34 (70 per cent.), the same as before operation in 10 (20 per cent.), and worse in 4 (8 per cent.). Here again our results correspond with those obtained by Mr. Watson, who found that 64 per cent. of the cases examined by him had good or fairly good hearing after operation, whereas only 35 per cent. had similar hearing before operation.

Stay in Hospital.

Modified Radical Mastoid Operations with Skin Graft (1919-1925 inclusive).—Of the 29 cases in this group the stay in hospital was noted in 27, as follows: 14 days and less, 12 (44 per cent.); from 14 to 21 days, 10 (38 per cent.); more than 21 days, 5 (18 per cent.).

Modified Radical Mastoid Operations without Skin Graft (1919-1925 inclusive).—The duration of the patient's stay in hospital was noted in 22 of the 23 cases in this group, as follows: 14 days and less, 8 (36 per cent.); from 14 to 21 days, 10 (45 per cent.); more than 21 days, 4 (19 per cent.).

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[1] *Journ. of Laryngol., Rhinol., and Otol.*, vol. xxvii, 1912. [2] Ibid., vol. xxxiv, 1919. [3] Ibid., vol. xxxvii, June, 1922

III.—PROFESSOR HEINRICH VON NEUMANN,

Vienna.

MASTOIDITIS can be considered from many points of view, since the lesions are both various and variable. As its clinical aspect is indefinite, so is its diagnosis often uncertain, the latter being often a matter of opinion rather than a question of objective signs.

Further, as we are apt to include in the term "mastoiditis" both its diagnosis and its operative treatment, our ideas as to its meaning become even more vague, particularly as the indications for operation vary in relation to both the surgeon and the locality in which he lives.

A disquisition on the clinical aspect of mastoiditis is unnecessary, but I think it is worth while to describe our procedure once the disease is diagnosed. In the first place, I would urge that we should endeavour, by pathological, anatomical, and clinical research, to treat successfully acute inflammatory affections of the middle ear by conservative means. Up to the present, and in spite of extensive histological research, we have no definite conception of the conditions demanding operation, inasmuch as we are unable to describe the conditions under which spontaneous cure may result.

Acute otitis media is an acute inflammation of the mucous membrane of the tympanic cavity; it probably always extends more or less to the cellular structure of the mastoid process. The inflammation in the membrane lining the mastoid cells differs in character from that affecting the mucous membrane of the middle ear, since the former is not a true mucous membrane and should not be so described. Its histological structure is not yet decided, but the modern view is to regard it as a muco-periosteum or endosteum.

In the majority of cases of acute otitis media the mastoid inflammation resolves, and the disease is limited to the middle ear. At times, however, there is a progression of

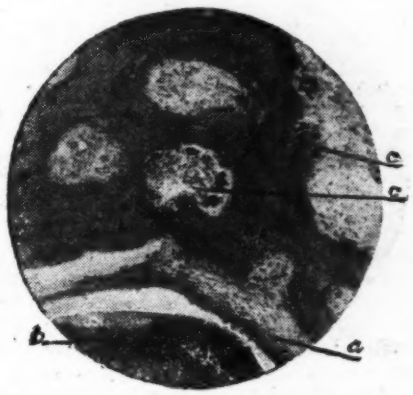

FIG. 1.—Early mastoiditis. (*a*) Inflamed mucous membrane of air cells; pus in cavity. (*b*) Adjacent inflammatory changes. (*c*) Osteoclasis.

inflammation in the mastoid cells, and their bony walls become involved. We are then confronted with a true osteitis with which it is necessary to deal by operation. As to the factors on which this extension of inflammation depends and progresses we can only speculate. Amongst others are certainly the kind and degree of virulence of the infection, the so-called individual power of resistance, and the anatomical and histological structure of the temporal bone itself.

We have endeavoured to determine the processes concerned in the progress of mastoid disease, and have, in this investigation, examined tissues removed during operation. While such material has been taken from cases both in the early and later stages of disease, we have only been able to determine therefrom an approximate idea of the histological conditions preceding mastoid osteitis.

Although we have obtained much positive knowledge, the inferences gathered from the data are not conclusive. Fig. 1 shows an early condition of mastoiditis (osteitis). The membrane lining the cells is thickened in many places and undergoing cell proliferation. In the cell spaces themselves there is free pus. In the neighbouring canal system osteoclasts are seen which have already destroyed the struc-

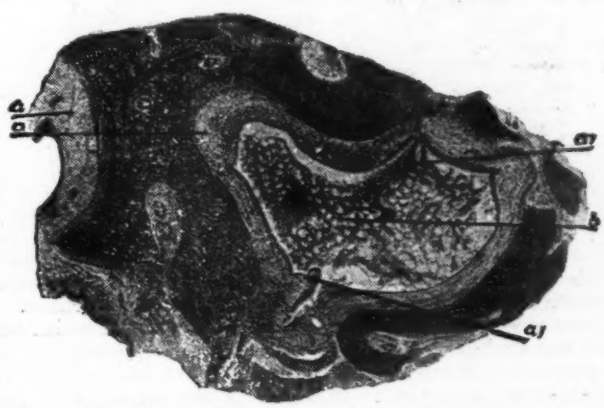

FIG. 2.—Mastoiditis in third week. (*a*) Thickened lining of air cells with (a^1) proliferation into the exudate at (*b*).

ture of the bone. We are thus examining a specimen at a time when the cells are filled with pus and a destructive osteitis has spread in the canals. The spontaneous recovery of such a condition is both questionable and unsupported by histological research. In Fig. 2 we see an intermediate stage in which the cell proliferation of the membrane lining the pneumatic spaces has proceeded a stage further and has invaded the inflammatory exudate, which is already

not know if this slight deformity can be avoided by using meatal plastic methods other than Körner's as I have never tried them.

After-Care of the Operated Ear.

Even after the patient has apparently made a satisfactory recovery and the cavity has been completely lined with epithelium, some attention is necessary if things are to remain satisfactory. Unless the operation cavity is cleaned out at regular intervals wax and epithelium accumulate, so that in time the cavity is lined with a layer of debris beneath which there is some pus. Printed instructions are now given to all "radical mastoid" patients on leaving hospital. Further, they buy, or if too poor they are provided with, an efficient metal ear syringe. In very many cases, however, we find that the instructions have not been followed and the syringe has not been used. As a rule patients confess, when they report for inspection, that nothing has been done to their ears since shortly after they left the infirmary. In some the auricle and mastoid region have not even been washed with soap and water. This question of "after-care" is a very weak spot in regard to the operation. I often envy the abdominal surgeon who, at the end of the operation, closes up the wound; the patient gets better or dies, but, if he recovers, all he has to do is to wash the scar in his daily bath, if he is cleanly, or not to wash it if he is not. There is no operation cavity and no wax.

Causes of Failure to Obtain a Good Result.

Apart from inefficient operation we may enumerate:

(1) Failure to close the Eustachian tube and to get rid of the tubal air cells. Many of these cases occur in children; they are really cases of tubo-tympanic catarrh or suppuration, and are not suited for the radical mastoid operation. In such cases we should treat the nose and nasopharynx, try vaccine therapy, syringe out the tube either through the Eustachian catheter or from the external meatus by means of a bulbous-ended syringe, followed by inflation and injection of silver nitrate, argyrol, or collargol. I have no experience of artificial closure of the tube by means of bone splinters, or skin flaps and catgut. I always tell patients and their doctors that I cannot promise a perfectly dry ear after the radical mastoid operation, but since the introduction of Marriage's skin-grafting method our results as regards closure of the tube have been much better. In cases in which the radical operation has been performed Brühl, who does not believe in closing the tube, recommends drying out the cavity with hot air, probably by means of a dental appliance. He also mentions the application of trichloracetic or lactic acid to the tubal region and exposure to real and artificial sunlight.

(2) A faulty state of the patient's general health. During the war, when we were operating on young and otherwise healthy men, it was remarkable how well the radical mastoid cavity healed—much more quickly than in ordinary hospital cases.

(3) Narrowness of the external meatus and want of care of the operation cavity have already been dealt with.

PROGRESS.

With the object of obtaining statistics as accurate as possible I requested all patients operated on in the years 1919 to 1925, inclusive, to report at the infirmary for re-examination. At first I tried to do this work myself, but found that it took up so much time on waiting days that I could not get through the ordinary work in a proper way. I therefore asked my clinical tutor, Dr. J. P. Stewart, to examine the patients who reported, to note the condition of the operation cavity and to test the hearing. I am greatly indebted to Dr. Stewart for the care with which he carried out this work, and to my secretary, Miss Cadzow, for the preparation of this report.

In order to get at the results in as large a number of cases as possible, I have included in this paper not only the results of Dr. Stewart's work but also the findings obtained at two previous inquiries on this subject—namely, that by Dr. J. K. Milne Dickie of Ottawa[1] and that by Dr. W. T. Garretson of Detroit.[2] These specialists were kind enough to examine patients operated upon by me before 1911 and 1919 respectively.

Progress after the Radical Mastoid Operation—with and without Skin Graft. (Total cases, 628.)

Uninterrupted recovery while in hospital, 387; the skin graft was entirely unsuccessful in only 11 out of 377 cases; unexplained fever for several days after operation, causing anxiety but with eventual recovery, 13; tonsillitis, 4; septic rash (surgical scarlet fever), 12; erysipelas, 6; stitch abscess or marked suppuration in posterior wound, 35; dermatitis of external meatus, 3; perichondritis (slight and severe), 10; keloid in scar of incision, 2; giddiness with nystagmus to sound side (serous labyrinthitis), 19; purulent labyrinthitis, 2; facial paresis present on day after operation, 3 cases; coming on more than twenty-four hours after operation, 8 cases; severe haemorrhage from cut edge of external meatus, 3; operation broken off on account of haemorrhage but completed later with success, 1; death following radical mastoid operation, 3 in 628 cases—less than 0.5 per cent.

Shortly after the appearance of a previous paper, by Dr. Milne Dickie and myself, on the mastoid, labyrinthine, and intracranial complications of middle-ear suppuration, one of the followers of Mr. Charles Heath wrote as follows: "The risk to life from Heath's operation is practically *nil*, whereas the radical mastoid operation boasts a death rate of at least 16 per cent." In a subsequent paper, written in collaboration with Dr. Garretson of Detroit, U.S.A., I tried to make it clear that the fatalities, with two exceptions, had occurred in cases in which labyrinthine or intracranial complications were already present when the patient was admitted to hospital, and that the radical operation *per se* had nothing to do with the fatal ending. The result would have been the same if the modified radical operation had been done in place of the radical. In order to avoid any misunderstanding I am omitting from the present paper all cases in which a labyrinthine or an intracranial complication, such as brain abscess, septic sinus thrombosis, or purulent leptomeningitis, was present on admission.

The three fatalities following the radical operation were as follows:

1. Aural septicaemia or bacteriaemia; the cranial blood sinuses were normal *post mortem* (*Journ. Laryngol., Rhinol., and Otol.*, vol. xxxiv, 1919, p. 380).
2. A child fell out of bed on the day following operation, and afterwards became unconscious. Lumbar puncture yielded clear fluid under normal tension. *Post-mortem* examination refused. Cause of death uncertain—status lymphaticus? septicaemia? acidosis? injury to skull? (Ibid.)
3. The patient had pneumonia on admission, and was slightly cyanosed and delirious. Death occurred three days after the radical operation on the left ear and two days after the modified radical operation on the right ear. *Post mortem*—pneumonia.

RESULTS.

The cases have been divided into two groups: Group I, with immediate skin graft; Group II, without immediate skin graft.

GROUP I.—*Radical Mastoid Operation with Immediate Skin Graft* (1916-1925 inclusive).

In this group there were 293 cases; of these, 14 had both ears operated upon, making a total of 307 ears. Of the 307 ears 185 were re-examined, and showed the following results:

Operation Cavity.—The cavity was epithelialized and quite dry in 61 (33 per cent.); the outline of the inner wall was retained but one or two small areas of moist pink mucosa were present (want of cleanliness) in 92 (50 per cent.); there was therefore a satisfactory result in 83 per cent. Pus was present with swollen congested mucosa or granulations in 20 (10 per cent.). There was much pus, polypi, and narrow meatus (failures) in 12 (7 per cent.).

Hearing.—The hearing was tested in 172 cases. In 27 (15 per cent.) it was much improved, and in 80 (46 per cent.) it was improved—61 per cent. therefore had improved hearing. In 41 (23 per cent.) the hearing was as before operation, and in 24 (14 per cent.) it was worse.

GROUP II.—*Radical Mastoid Operation without Immediate Skin Graft* (1907-1925 inclusive).

The total number of cases in this group was 268; the re-examinations numbered 157.

Operation Cavity.—There was a satisfactory result in 83 (52 per cent.); the operation cavity was epithelialized and quite dry or showing only want of cleanliness—that is, after removal of wax and cast-off epithelium the outline of the inner wall was retained but the cavity showed one or two small areas of pink mucosa on the inner or posterior wall. There was an unsatisfactory result in 74 (47 per cent.)—that is, there was membrane formation or pus and granulations (polypi) in the cavity.

Hearing.—This could be tested in only 132 cases when the patient reported. It was improved in 59 (44 per cent.), the same as before operation in 42 (31 per cent.), and worse in 31 (23 per cent.).

Stay in Hospital.

I. *Radical Mastoid Operations with Skin Graft* (1919-1925 inclusive).—Of a total of 238 operations the stay in hospital was noted in 221 cases. In the other 17 cases the stay in hospital

matter of zealous investigation by anatomists, embryologists, and especially clinicians; the work of Cheatle comes prominently before the mind in this connexion.

The expert operator, benefiting by an experience bought with great pains, knows when he has removed all that is necessary, but the tyro is not so easily able to recognize when he has completed a mastoid operation. We have therefore permitted ourselves to frame a definite technique for didactic purposes in order to prevent the operator young in experience from leaving behind diseased tissue.

After opening the antrum we remove all cells in the neighbourhood of the zygomatic process, which often appear separated from the main collection of cells by a definite partition, and may be easily overlooked. Then we open up the cells which lie on the posterior aspect of the meatal wall, along the course of the Fallopian canal (the retrofacial cells). It must not be forgotten that this group of cells often extends behind the horizontal semicircular canal beneath the labyrinth, and, further, that the retrofacial cells are in connexion with the peribulbar cells, and that these latter are in continuity with the medial and lateral cells in the neighbourhood of the digastric groove and the apical cells. Lastly, we deal with those cells around the sinus in the posterior portion of the mastoid which we describe as "marginal cells"; through this area run one or two emissary veins. Upwards these cells are in connexion with the cells of the petrous bone, which latter are interposed between the lateral sinus and the dura of the middle fossa; they are often of considerable size, and extend far backwards.

In the pneumatic type of mastoid all these groups of cells are more or less developed, and according to our method of operation systematically sought for and opened, leaving a characteristic operation cavity with relatively smooth boundaries, in which the bony covering of the sinus stands out in relief. If the resulting cavity is too narrow its width may be increased by removal of the outer boundary of the posterior meatal wall.

Since we adopted the above procedure in our clinic no secondary operations have been necessary. The operation cavity left after the method of operating described is naturally larger than the usual one, and the question of after-treatment is raised; this will, of course, be of longer duration, but we consider this to be counterbalanced by the result in view. After-treatment is prolonged if the wound is left quite open, as it must always be if the sinus or dura is exposed; it is shorter if the upper part of the wound is sutured, and this procedure will also give a neat-looking scar.

It is said that the after-treatment is concerned in the possibility of recurrence. We have seen no difference in this respect between our method and the usual method of operation. In the repair of a large or small operation wound in the mastoid the cavity is filled with fibrous tissue consisting more or less of a system of spaces in communication with the antrum. This is followed by a new growth of bone which, after a thorough operation, is very slight, and in no way corresponds to that production of bone resulting from inflammation.

The larger scars resulting from this operation are a disadvantage, and compare unfavourably with those left after a simple anterotomy. Work on plastic operations and efforts towards closing the operation wound would almost give rise to the impression that the whole problem of mastoiditis is referred to the cosmetic appearance of the scar!

We do not hide from our patients and their friends the fact that mastoiditis is not to be regarded as harmless, or an operation without risk; we explain that it must entail a certain risk, and that the question of a neat scar is of secondary importance, and should not in any way influence the thoroughness of the operation. After all, the operation scar lies behind the ear, and can neither be seen from the front nor in profile, and in the case of women can readily be covered by an arrangement of the hair.

To recapitulate a few points: By the systematic removal of the cells as described above we are relieved of any doubt as to the extent of the disease, what bone should be removed or what may be left; it is scarcely possible to overlook an infected cell which might be the source of complications later.

Inasmuch as the marginal cells are removed, we have naturally to take away the cortical portion of the bone behind the sinus as deeply as possible—sometimes to below the knee of the sinus—and thus a somewhat wide, open funnel-shaped cavity results, which can often be improved by removal of the outer portion of the posterior meatal wall.

The apex of the mastoid process is not usually resected, unless the disease makes this imperative; incidentally such a resection is responsible for most indrawn and visible scars, since the origin of the sterno-mastoid is interfered with.

The post-operative progress is usually uneventful, if we except those cases in which exposure of the sinus or dura may render the course more difficult.

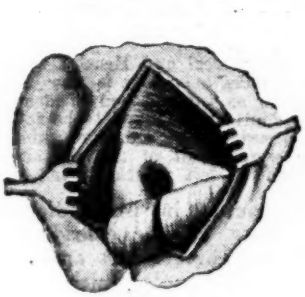

FIG. 5.

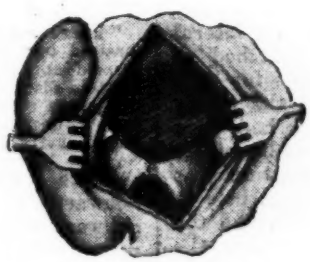

FIG. 6.

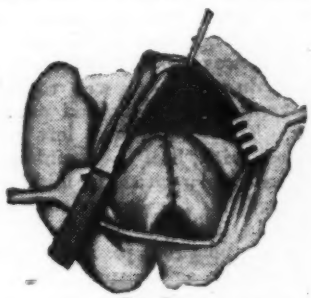

FIG. 7.

FIGS. 5, 6, 7.—Stages in operation.

It should be mentioned that the earlier operation is undertaken the more probable are complications of the soft parts; if, however, undue respect is not paid to the cosmetic result such complications are rare. It is wise, therefore, to leave the wound widely open, especially in its lower part, where such undesirable sequelae usually begin.

It has been urged by many that the possibility of a retro-auricular antral fistula is a disadvantage of our method. As a fact, we but rarely meet with them. In our view a large mastoid wound is not responsible for a fistula. Rather is it to be referred to an incomplete operation, the leaving of unopened cells and areas of diseased bone; such residua cause long persistence of a discharging wound and the ingrowth of epithelium into its cavity.

It may not be out of place to describe the method we employ in closing a retro-auricular fistula, as it has given us infinite satisfaction. (See Figs. 5, 6, 7.) We remove the old scar, reflect the skin forwards and backwards, and fashion two periosteal flaps with bases below. These flaps are laid into the freshened bony cavity and united with a few sutures; the cavity is further filled up with flaps from the temporal muscle, varied in size and shape to fit individual cases. The skin is united and a small gauze drain left in the lower angle of the wound. The dressing is changed on the fourth day, and the gauze drain removed and not replaced. The result is favourable whether the stitches hold or not; healing should follow by first intention; if small pockets remain in the wound the closing of them is only a matter of time.

In this address I have attempted to give our attitude towards the question of mastoiditis, based on our experience for the last few years. As in other questions in medicine, we do not claim that the last word has been spoken, but we propose to persist in this method and practice until possibly other methods and further research compel us to adopt other treatment.

becoming organized. Still later, in Figs. 3 and 4, there are outgrowths of rapidly formed spongy bone which are filling the original cavities of the pneumatic cells. The more advanced the disease the more this irregular growth of bone is evident.

There is no relation between the clinical symptoms of mastoiditis and its histology. There may be the most severe

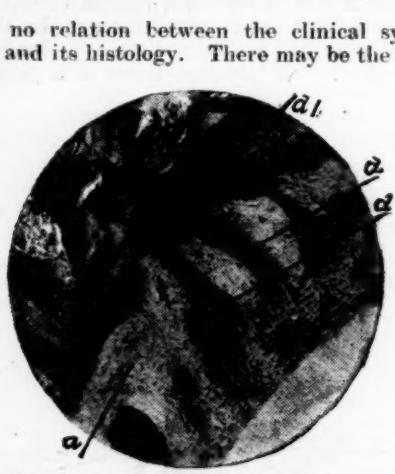

FIG. 3.—Mastoiditis in sixth week. (a) Newly formed bone in thickened lining of air cell contrasted with lamellar structure of original bone (a^1).

clinical manifestations associated with insignificant pathological changes, or, on the other hand, an almost complete destruction of bone with an almost complete lack of symptoms, especially if the *Streptococcus mucosus* is responsible. Mastoiditis, therefore, is a clinical condition not lending itself to accurate definition, and the indications for its operative treatment remain, as has been already stated, largely a matter of individual opinion. Radiography does not assist us in deciding upon the stage of the disease, since even the presence of an exudate in pneumatic cells will cause a shadow and give no definite information on the state of the bone. The best time to operate is when the inflammatory process has subsided and become restricted, and before complications have occurred. The period at

FIG. 4.—Columns of newly formed bone in lumen of cell.

which such complications are most likely to occur is best determined by a statistical investigation from one clinic.

From a series of 800 cases of acute otitis media which we have collected during the past six years (arranged below in tabular form) it appears that the occurrence of complications has a general relationship with the duration of the disease. Although it is true that a large percentage of complications occurs during the first week (8 out of 14 cases, of which 3 patients died of meningitis, in a further 3 the sinus wall was involved, and in 2 sinus thrombosis had occurred, with ultimate recovery), the greatest number supervene during the sixth week and after. We therefore should not postpone operation until this time; most authors agree that operation should not be delayed beyond the third or fourth week of the disease. Operation at an earlier period—that is, in the second or even the first week—will generally be declined, and as a surgical reason against the

Table showing Percentage of Complications in 800 Cases Operated on for Acute Otitis Media.

	Week during which Operation was Performed.								
	1st.	2nd.	3rd.	4th.	5th.	6th.	7th.	8th.	Later than 8th.
No. of cases operated on	14	105	143	165	112	72	41	62	86
Complications (347) and deaths (41 = 5 %)	8 (57 %)	32 (31 %)	50 (35 %)	64 (39 %)	44 (39 %)	42 (58 %)	22 (55 %)	34 (55 %)	51 (60 %)

so-called "early" operation, the lack of obvious delimitation of the inflammatory process is urged.

It is very difficult to distinguish between diseased and healthy bone, and the possibility thus exists of disseminating the disease and infecting portions of the bone hitherto healthy, thereby prolonging the after-treatment and risking a second operation either for a recurrence of the disease or for the repair of a retro-auricular fistula. A small group of otologists holds the opinion that the early operation should be advised, and recommends it in the earliest stages of the disease with a view to preventing the development of complications. It is obvious that the earlier operation is done the larger will be the number of operations performed with their ensuing accidental risks, such as wounding of the sinus, the dura, the brain, or the labyrinth; those associated with the anaesthetic; the possibility of infecting an exposed sinus; the development of erysipelas, pneumonia, and so on. It is doubtful if the mortality will be decreased by a general acceptance of the proposals for early operation. A still smaller group defer operation until the sixth week—that is, of course, if no alarming symptoms, such as high temperature, rigors, or cerebral disturbances, demand immediate surgical relief. The statistics, however, of these late-operated cases appear to us to give too large a number of complications, especially perisinus and extradural abscess.

We have based our ideas as to the indication for operation on the result of statistical inquiry, and indeed this is the only practical method when clinical symptomatology fails. According to our statistics, then, as we have shown, it would appear that the third and fourth weeks are the times of election for operation; but this, too, is a statement which requires qualification, in that its accuracy is influenced by whether or not the case has been under observation since the onset of the disease; in the former the mortality is only 1 per cent. This reaches 5 per cent. in those cases coming to operation at the same period but which have not been previously under observation.

Removal of bone in order to give us an idea of its condition before operation is neither practical nor would it be of much assistance, since we do not know under what conditions a spontaneous cure may result. As is seen in the illustrations, there is an active process of regeneration in progress at the time we usually operate, and the longer the disease has existed the greater the new bone formation. What we remove at the operation with chisel and curette is for the most part new bone, as histological examination shows. We therefore destroy and remove vast masses of regenerating tissue. The paradox of removing regenerating bone in order to cure osteitis is more apparent than real.

The existing inflammation is responsible, first, for bone destruction, and secondly, for its regeneration. Therefore, destruction and regeneration are proceeding *pari passu* and in close relation with each other, and consequently we find healthy unaffected bone, necrotic bone, and new bone at the time of operation. It is impossible to say, however, by inspection of the tissue what is healthy or what can recover; the new bone, deficient in calcareous matter, is soft to the curette, and for the greater part embedded in granulation tissue, while the infected bone is as hard as, or even harder than, normal.

On these considerations, and on the complicated arrangement of the pneumatic cells of the temporal bone, depends the failure of many operations. The pneumatic structure and the placing of the mastoid cells has always been a

the antrum—the only part packed—was a cavity of "remarkably little sensibility."

If after Schwartze operations the wounds were left open, disfigurement must result; Mr. Heath had known plastic operations needed to remove them. An operation requiring this was not ideal. At the Downs Hospital recurrent Schwartze cases were dealt with thus: First, through a fresh incision, close to the ear, a conservative mastoid operation was performed; secondly, the old scar (and suppurating sinus if there was one) was excised and the wound was sewn up; in this way danger and disfigurement were both removed.

An inaccessible antrum was the great cause of danger from recurrences after Schwartze operations, because this cavity was not open to the air, as it was after the conservative one. Indeed, in the technique of the latter the dangerous antrum was cut off from the middle ear altogether; it became a part of the outer ear, was always open to the air, and was therefore safe—a surgical rearrangement of the hinder end of the middle ear, which Mr. Heath had devised to ensure the future safety of the patient by providing a permanent safety-valve.

Other indictments of the Schwartze operation had to be added, including the prolonged after-treatment, as compared with the conservative operation. Fourteen days after the performance of conservative mastoid operations on two nurses the patients were working in their wards; neither had an ear dressing of any kind, not even a small piece of wool. In that short time the perforation in the drum of each had healed; their ears were sound and safe. Quick recoveries occurred in the majority of these cases, and were equally rapid when both ears had undergone operation at one sitting by this method.

In the Schwartze operation there was also the liability of dislocation of the incus bone, causing deafness, in consequence of the surgeon's inability to locate it precisely, because the tympanic ring and drumhead were not exposed for this purpose in Schwartze operations as they were in the conservative one. This would explain some of the cases of deafness following Schwartze operations hitherto inexplicable.

Suppuration within the sheath of the temporal muscle occurred both in Stacke's (radical) operation and in that of Schwartze because the sheath was opened during these operations; since aural discharges before and after operations on the ear were septic, the exposed muscle might become involved in the septic process. The opening of the sheath was avoided in the technique of the conservative operation; in consequence of this and its other advantages this technique was largely followed, at the Downs Hospital, in every mastoid operation performed there, even the radical ones.

The Schwartze so-called "simple" mastoid operation was too simple; it was a crude proceeding, like the earliest abdominal operations, and a disfiguring emergency measure, hurriedly devised to save life by providing drainage for an acute abscess in bone in a dangerous locality. It made no provision against an equally or more serious recurrence, and might or might not assist in the preservation of the hearing; it was not devised for this purpose. The objectionable features inseparable from Schwartze's operation had all been overcome in the conservative one.

The present position of Stacke's (radical) operation could not be maintained, because of the deafness it left, and because timely conservative operations did not leave deafness. In addition to the handicap of deafness, patients were so long in hospital after radical operations that the output per bed was small, whereas patients were usually home in a week or less after mastoid operations on conservative lines. With the present accommodation at the Downs Hospital they could turn out from five to ten times as many good ears after conservative operations as they did now if patients were sent in before their ears were damaged by disease. This would entail more operations, but the timely performance of operations had proved so effective and safe in appendicitis that it was satisfactory to know that mastoid operations could be equally so. As a rule Mr. Heath's patients were out walking three days after mastoid operations, and were not so ill as those who underwent the removal of tonsils. The conservative operation, therefore, could justly be regarded as a small matter compared with the great importance of saving hearing and ending the futile time-wasting out-patient treatment.

With regard to treatment by ionization, Mr. Heath said that this not only failed to cure (because of physical difficulties due to the anatomy of the ear), but it failed to prevent the destruction of hearing by disease. Its general use, therefore, for this ear disease was not justified. In a shorter time than the ionization treatment was spread over discharging ears could be cured by conservative mastoid operations. There were aural conditions, however, in which ionization was occasionally useful. Mr. Heath used it, not before, but after mastoid operations in cases of long-standing disease which were slow in healing, because after operation the ear could be completely filled with the ionizing fluid; before operation this could not be done, hence the failure of the treatment then. The ears which were likely to derive benefit from ionization alone were the very badly damaged ones, which would never be sound again even if dry.

Mr. E. D. D. DAVIS (London) said that an experience of over 500 mastoid operations had shown that the amount of after-treatment depended very much on the efficiency and type of operation performed; the less the after-treatment the better and more efficient the operation. In the case of the radical mastoid operation performed for suppuration of long duration there were certain details which helped to eliminate after-treatment. It was important, at any rate in the case of children, that unhealthy tonsils and adenoids should be removed before operation, and as a preliminary to this the mouth and teeth should be put in order. In a few cases where this had been done the mastoid operation had been rendered unnecessary. The mastoid operation should be performed as early as possible after the more conservative treatment had failed, and the less radical the operation the better. Mr. Davis was in favour of the modified radical operation described by Logan Turner and others. The removal of a large area of bone was rarely necessary, and the lateral sinus and middle fossa dura should not be deliberately exposed unless signs and symptoms demanded this. The middle ear and auditory meatus should be treated as gently as possible. Curetting was decidedly harmful, and after removal of the malleus and incus the remainder of the drum should be left to cover over the orifice of the Eustachian tube.

The continued Eustachian discharge was the disadvantage of many radical mastoid operations, and the speaker had tried every known form of treatment to close the Eustachian tube, with little success; he had come to the conclusion that in those cases in which there was no Eustachian moisture a false membrane or scar had sealed the orifice of the tube, and this scar formation was helped by leaving the remnants of the drum. Grafting failed to close the tube, and he did not think grafting was worth the trouble except in cases where there was a large cavity and extensive removal of bone. The method of treatment he preferred was to pack loosely with gauze soaked in fluid bipp the aditus and opening in the posterior meatal wall left by the cutting of the flap. The ear was dressed as little as possible, and then only under strictly aseptic conditions. The first dressing was done four to five days after operation, when the gauze packing was changed, and subsequent dressings followed not more than once every other day. When the post-aural wound had healed the outer dressing was left off and the patient went home at the end of a fortnight, being told to keep the meatus clean by gentle mopping with boric lotion, and to avoid plugging with cotton-wool so far as was practicable. Mr. Davis was convinced that hydrogen peroxide spirit drops, or any other drops, did more harm than good. The patient was seen once a week until the mastoid had healed, which, in the satisfactory and private case, took nine or ten weeks. In the simple or Schwartze operation he had been in the habit of performing a very complete exenteration of all the cells, like that described by Professor Neumann, also of incising the drum to drain the middle ear. The wound was closed with the exception of a small drainage tube, to be removed at the end of forty-eight hours. He strongly condemned the popular packing of the wound, which he considered unnecessary. Complications occurred,

GENERAL DISCUSSION.

Mr. LIONEL COLLEDGE (London) thought that it ought not to be necessary to remind aural surgeons that they could not disregard the well established principles of surgery by leaving dead spaces undrained and by neglecting to arrest haemorrhage, proceedings which were, however, still recommended and practised. It was such a common experience for patients to present themselves with an abscess bulging out a post-aural scar in cases where the presence of stitch marks showed that the wound had been sutured after a Schwartze operation performed several months or perhaps a few years earlier, that, however cynical this remark might sound, it was fully justified by experience. On reopening such wounds a cavity with rough overhanging edges of bone was found full of pus and septic granulation tissue, showing that healing had never occurred. If the operator wished to close the wound after a Schwartze operation it was much better to do so as a secondary measure when the cavity was lined with healthy granulations at the end of five to ten days, and then only if the stitches could be so applied as to obliterate the cavity. This was possible if the cavity was not too wide. Bipp applied to the bone was useful, but there was no magic in it, and an occasional apparently brilliant result did not justify the departure from sound principles. If the wound was stitched primarily the lower end should be left wide open and drained. A better method if the cavity was large and could not be obliterated, and especially if it was heavily infected, with a sloughing lateral sinus or dura mater, was to adopt Carrel's method of wound treatment—a method particularly suitable for bone wounds. The wound was left wide open and the cavity was filled with half-inch ribbon gauze which had been soaked in eusol; into the middle of this an india-rubber tube closed at the lower end with a silk ligature was introduced. There should be only one fairly large hole in the side of the tube, just above the silk ligature, and the tube should be so arranged in its nest of gauze that the hole looked directly inwards. A gauze dressing with a round hole for the passage of the tube and a crescentic opening for the auricle was applied over this. The tube should be just long enough to project outwards between the upper folds of the bandage. The skin should be smeared with vaseline to protect it from the action of the eusol. With a small syringe the nurse injected a drachm of eusol down the tube every two hours. This dressing should be changed daily. As it was wet it did not stick and was painless, and it was gratifying to observe how in a few days sloughs disappeared and the cavity became quickly obliterated by bright red firm granulations. If the lateral sinus had been opened and obliterated with packing the constant soaking made the removal of this a very simple matter. There was a further advantage that the epithelial edges appeared to spread in very rapidly under the influence of eusol. When the cavity had become quite shallow it was sufficient to dress the granulating surface with boric powder to prevent the dressing from sticking to the surface.

In the management of the cavity left after the radical operation Mr. Colledge was among those who preferred to graft. If there was any contraindication to grafting such as an opening into the labyrinth and exposure of the facial nerve, it did no harm to smear the cavity with a little bipp and pack it lightly. The packing was removed in five or six days, and thereafter the cavity was filled daily with boric powder. The worst results were produced by prolonged packing with ribbon gauze. Carrel's method did not lend itself unless the post-aural wound had been left open, in which case it was very useful, provided that a large meatal flap had been cut. The speaker believed that whenever possible the cavity should be lined with a graft, which secured healing more rapidly, and with more certainty; the hearing afterwards was, in his opinion, better. In some cases of double radical operation in which only one side had been grafted he had always found that the result was better and the hearing better on the side grafted. The graft might be applied primarily at the time of the operation, but he thought it was safer and more satisfactory to do this at the end of about a week. Of the various ways the easiest and most effective was that of Mosher. The Thiersch graft was spread over a hollow cone of gauze impregnated with paraffin wax. The paraffin wax made an exact cast of the cavity, so that the graft fitted accurately; nor did it adhere to the graft, so that when the cone was withdrawn in a week's time the graft was left in perfect position. If the post-aural wound had been left open it was very easy to do this, and there was no difficulty if it had been closed, because the cone, being hollow, could be made to collapse and be withdrawn through the meatus. A few days later the superficial layer of the graft was cast off as a slough, leaving the bone completely covered with epithelium. At the present time Mr. Colledge believed that this method was superior to all others.

Mr. CHARLES HEATH (London) said that at the Downs Hospital for Children, which was, he believed, the largest ear hospital in the world, they aimed at the prevention of those calamities which could not be avoided when the operations under consideration were adopted; these operations were Schwartze's so-called "simple" mastoid operation and Stacke's "radical" one. He hoped to explain how these calamities could be prevented, as deaths from appendicitis had been. An appended note to an article by Dr. Anthony Wrench, entitled "Some guiding principles in the post-operative treatment of mastoid disease," was as follows:

> "These remarks apply to the radical and Heath's conservative mastoid operations. The Schwartze operation is now never performed at the Downs Hospital, as this method of dealing with mastoid disease has not infrequently been found to be followed by dangerous recurrences. The dressings also are more painful. The scar is unsightly. And, the worse fault of all, the site of the antral cavity and the drumhead are left practically inaccessible."

There were thus four counts in his indictment of Schwartze's operation. Mr. Heath considered that Schwartze operation wounds, whether left open or sewn up, were liable to dangerous recurrences, which he had seen at the Downs and at fever hospitals. They brought about conditions as bad as or worse than those existing at the time of the original operations—namely, pus in the antrum and under the skin behind the ear. In consequence of a death, due to septicaemia and meningitis, resulting from a recurrence after a Schwartze operation performed at a seaside town, which came under observation at the Downs Hospital, he had felt constrained to point out the dangers of recurrences after Schwartze operations and their absence in recurrences after conservative ones. He was glad, therefore, to learn, from Dr. Wrench's article, that Schwartze operations had been given up. Further, the surgeons at this hospital had experience which was unequalled elsewhere and justified a decided attitude regarding this or, indeed, any other mastoid operation. Were it not that the "after-treatment and results" of this operation were down for discussion and that they saw sad recurrences after its use, he would have imagined that it was obsolete and that he was "flogging a dead horse." Twenty years ago (1906) Dr. Percy Jakins, surgeon at the Central London Ear and Throat Hospital, after seeing the conservative operation performed by Mr. Heath at the Throat Hospital, Golden Square, said: "Your operation will take the place of all Schwartze and most of the Stacke radical operations"; he had performed no Schwartze operations since. The senior aural surgeon at one of the large teaching hospitals in London had recently informed the speaker that he never performed any mastoid operations except by the conservative method.

Painful dressings were complained of when the Schwartze wound was left open—an important matter at the Downs Hospital, with 150 children who could not tolerate them. The after-treatment of mastoid operations was an art, and the operative technique should be designed to facilitate it; this had been done in the conservative one. For example, a baby, aged 3 months, with aural discharge and polypus operated on by the speaker only required four subsequent dressings. The after-treatment at the Downs Hospital allowed of one person dressing over 100 patients in a morning; after the conservative operation these dressings were performed more easily than after any other, because

Mr. NORMAN PATTERSON (London) asked Professor von Neumann whether, in doing a modified radical operation under a local anaesthetic, it was his practice to remove the incus. Professor VON NEUMANN replied that in about 80 per cent. of cases of chronic otitis the incus was disarticulated from the stapes, and in these circumstances he removed it; its removal did not adversely affect the hearing.

Mr. G. J. JENKINS (London), in reply, supported Professor von Neumann in advising meticulous care in the opening up of all cells of the mastoid and neighbouring regions in operations for acute mastoiditis. He was familiar with the group of cells between the dura of the posterior fossa and the facial nerve, and examples of this group could be seen in Mr. Cheatle's collection in the Royal College of Surgeons. He knew of two abscesses of the cerebellum, just above and external to the jugular foramen, which seemed to be associated with the infection of this group of cells.

Mr. J. S. FRASER referred to tubal catarrh being responsible for the continuation of discharge after a radical mastoid operation, and spoke of the impossibility of curing it. His own experience of primary closure in a simple mastoid operation, undertaken against his wish and only from motives of dire necessity, had been followed by a fatal result.

PHARYNGEAL AND OESOPHAGEAL DIVERTICULA.

BY

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THERE is probably no group of lesions in the descriptions of which so much ignorance and inaccuracy have been so frequently perpetrated and perpetuated as in those appertaining to the various etiologically, topographically, and clinically distinct types of diverticula of the pharynx and of the oesophagus. The taking stock and the straightening out of this subject which I have undertaken are long overdue. Pouches originating in the former region, the pharynx, are almost invariably described under diseases of the oesophagus, and with great frequency they are actually, but wrongly, designated oesophageal pouches and occasionally pharyngo-oesophageal pouches. They are neither. Moreover the textbooks, both general and special, ignore at least four separate varieties of pouch which I shall emphasize later—two forms being truly of pharyngeal, and the other two of oesophageal origin.

The following is a classification of the various species of diverticula of the upper alimentary tract which, whilst presenting some features more or less in common, are for the most part etiologically, patho-anatomically, and in their clinical signs and symptoms separate and unrelated entities. Their presentation in tabular form will help to clear away many of the prevalent misconceptions which have obscured in the past and still obscure these lesions.

A. *Pharyngeal in Origin.*

1. Congenital centrally placed anterior diverticula.
2. Congenital lateral post-faucial diverticula. (Synonyms: Aeroceles; branchial diverticula.) The mouth of these pouches is usually in the region of the palato-pharyngeal fold, but may be lower down in the glosso-epiglottic and in the pyriform fossæ or near-by these. These pouches are due to embryonic developmental errors in the region of the branchial clefts. They form swellings on one side of the neck and of considerable size when of long standing. They contain air and mucous secretions, but rarely food, as the orifice on the lateral wall of the pharynx is usually so small.
3. Deep pharyngeal pressure diverticula or pouches. (Synonyms: Pharyngeal pulsion pouches; Rokitansky's pulsion pouches; Zenker's pulsion diverticula.) The mouth of these pouches is invariably situated posteriorly and mesially at the line of junction of the upper oblique and lower transverse sphincteric fibres of the inferior constrictor muscle. They are fairly common. (Pulsion pouches of the pharyngo-oesophageal junction—the Grenz diverticula of Rosenthal—and of the Lannier-Hackerman area at the upper end of the gullet are a figment of the imagination of untrustworthy and incompetent observers, and no *post-mortem* confirmation is obtainable of their occurrence. Most authors misleadingly include these alleged varieties, but on insufficient evidence and faulty observation.)

B. *Oesophageal in Origin.*

4. Traction diverticula, situated mostly more or less at the level of, posteriorly to, the hilus of the lung—for example, to the bronchial glands area (Rokitansky) They may, however, occur elsewhere—for instance, in the supraclavicular gullet (Chevalier Jackson), and in the epiphrenic segment not far from the level of the diaphragm (Starck, Luschka, Arnold, von Brosch, Halstead, Hurst, and others). (Synonym: Rokitansky's traction diverticula.) They are not really rare, apparently, though not often diagnosed during life, as symptoms are usually absent.
5. The traction-pulsion diverticula of Starck. In these a pouch originating by traction subsequently becomes expanded by food pulsion. Food lodging in these pouches was held by Rokitansky to be a frequent source of septic mediastinitis and various suppurative diseases of the lungs and pleura of hitherto unexplained origin. Such sequelae, however, have not been considered common by subsequent authorities.
6. Leugart's post-bronchial ledge pulsion diverticula, situated behind the level of the left bronchus above Leugart's ledge. These diverticula are rare.
7. Epiphrenic pulsion diverticula, situated in the lower third of the gullet not far above the diaphragmatic level (Zenker, Bensaude, Kraus, Starck, Hurst, and others). They are rather rare.
8. Dissecting diverticula.
9. Diverticular sinuses.

CONGENITAL CENTRAL ANTERIOR DIVERTICULUM OF THE PHARYNX.

Considering the frequency of anterior centrally placed fistulae, sinuses, and cysts at the base of the tongue (second branchial cleft survivals) diverticular aeroceles might be expected to occur there, and also in connexion with the third and fourth branchial clefts lower down; but the only recorded instance, probably of this nature, with which I am acquainted is a case recently reported by Hurst, in which there was stated to be a central opening on the posterior pharyngeal surface of the cricoid plate with a diverticulum passing down between the trachea and oesophagus; this filled up with food, causing dysphagia. This could evidently be capable of surgical extirpation by a lateral incision in the neck. Although of congenital origin it was evidently increased in size by food pulsion. This exceptionally, if not uniquely, placed diverticulum was discovered by radiography, to which recourse was had to explain the dysphagia.

CONGENITAL LATERAL PHARYNGEAL DIVERTICULAR SINUSES AND AEROCELES OF ABNORMAL BRANCHIAL CLEFT ORIGIN.

Branchial fistulae opening both externally and internally, and branchial sinuses ending blindly in the neck, opening either externally only or, less commonly, internally only, are by no means rare lesions, and are well known to be due to embryonic developmental irregularities in the devolution of the branchial clefts; cysts, dermoid and otherwise, can be traced to the same source; it is only very exceptionally, however, that a sinus passing into the neck from an internal pharyngeal orifice expands into an aerocele. Godlee and Bucknill, however, in recording such a case in 1901, referred to a comprehensive paper by Kostanecki in 1890 which, whilst dealing generally with lesions of branchial origin, such as cervical fistulae, sinuses, and cysts, mentioned a number of recorded cases in which an internally opening sinus had developed into a well marked diverticular aerocele, which presented as an obvious air-filled swelling in the neck.

Watson of Edinburgh recorded the first case of this form of diverticular aerocele in 1875; found in a dissecting-room subject, it reached the level of the clavicle and resembled a Florence flask with a very elongated neck, which opened by a small orifice at the favourite spot just behind the tonsil on the palato-pharyngeal fold.

The next record was also British. The elder Wheeler described and illustrated an enormous air-filled cervical diverticulum (aerocele); it was as large as a fair-sized orange. At operation it was found to extend in front of the sterno-mastoid, and was covered by a thin layer of muscle which I surmise was the platysma; it reached the

not as the result of a closed wound, but owing to the unopened suppurating cell. He was also opposed to the cutting of a meatal flap for drainage through the meatus, because stenosis of the meatus frequently followed, healing was delayed and a secondary sepsis occurred, too frequent and painful dressing was required, and the result was certainly no better than that of the simple mastoid.

Mr. HERBERT TILLEY (London) said that much of the pain caused by removal of the first dressing could be obviated by inserting a layer of oil-silk between the edges of the skin wound and the gauze strip when this material was used for plugging the wound. He quite appreciated Mr. Jenkins's apprehensions as to the possible dangers involved by primary and complete suture of the skin wound after the Schwartze operation. Some ten years ago Mr. Tilley had shown at the Otological Section of the Royal Society of Medicine a series of ten consecutive cases in which primary suture had been performed; in one patient the lateral sinus had been exposed by the disease. In no case was there any complication, and the patients were about in a fortnight, with a completely healed scar, intact tympanic membrane, and hearing as good as resulted from any other type of operation. It was essential to success that every infected cell should be removed as far as the naked eye could judge. The bony wound was freely cleansed with hydrogen peroxide, then with alcohol, and finally and freely smeared with bipp before suturing. A large number of patients had been operated on by this method by Dr. McNab of Johannesburg and Dr. Guthrie of Edinburgh. For the last few years Mr. Tilley had inserted a narrow bundle of silkworm-gut strands into the lower end of the wound; he removed them at the first dressing and then applied firm pressure over the bony wound. This seemed to obviate any possible danger in case there had been failure in removing all sepsis at the time of operation, and the delay in primary union was practically negligible. He only wished to maintain, in favour of the method, that it was a great time-saver of after-treatment.

Mr. NORMAN BARNETT (Bath) thought that a very advisable procedure in the after-treatment of the operation for acute mastoiditis was to wash out the middle ear through the aditus before the patient left the operating table. In this way a large amount of pus and debris was got rid of and healing was much more rapid. His experience with bipp and/or primary stitching of the posterior wound was not encouraging. He considered that the better treatment was to stitch up the upper part of the wound, to leave drainage, and to pack with iodoform gauze, or, in the case of a very foul condition, to fill the space with iodoform emulsion as well as packing it with gauze. In the later stages a sinus might refuse to heal, and for this he found that weak iodine was of value.

The object of the modified radical operation was to save the hearing apparatus of the middle ear; it was therefore necessary that this should be rendered as healthy as possible, and in his experience this was best achieved by washing out the middle ear through the aditus, which was reached by a large flap made in the posterior soft wall of the external auditory meatus. Through this a nozzle was passed into the obliterated mastoid antrum, and from an attached bag air was blown through the aditus into the middle ear and out through the opening in the tympanic membrane, carrying with it a considerable amount of debris. This was followed by washing out the middle ear gently with bland substances, such as normal saline or colloid silver, or a vapour of iodine and camphor might be passed through. In this way all disease products were gradually driven out from the middle ear and a healthy condition of the structures was promoted; there was then a very great likelihood of healing with restored function. Irrigation or inflation was continued for a varying period, according to the nature of the case and the amount of diseased tissue to be cleared. After this, in the great majority of his cases, the tympanic membrane healed even where it had been widely burst or was almost non-existent; this was true at almost any age. He had been greatly surprised to observe, even in elderly subjects, that the tympanum might become wholly closed in by a new tympanic membrane growing from an insignificant margin. It was a wrong attitude towards such a method of modified radical operation to suggest that it was simply an alternative draining through the external auditory meatus instead of behind. One of the great objectives of the method was to facilitate treatment of the middle ear afterwards, and to obviate the removal of this important part of the hearing apparatus.

Dr. W. JOBSON HORNE (London) had found the opening papers refreshing inasmuch as after going out in various directions for new treatment these had brought them back to where he started from thirty years ago. It was impossible to lay down hard and fast rules for the treatment of the mastoid antrum. He was in favour of a "large meatus," and he had seen advantage in meatal drainage in combination with post-auricular drainage with a small drain of guttapercha tissue. At the same time he was not in favour of completely closing the lower part of the post-auricular incision. After primary suture of the upper part, secondary suture was not required. The drooping auricle, or displacement of the auricle forwards, could be prevented by suitable bandaging. That was another reason for doing the dressings personally. He agreed that sepsis, when it occurred, was due very often to leaving the after-treatment to others. At times it was difficult for the surgeon to keep the after-treatment entirely in his own hands. A general anaesthetic for the first dressing was not required and was best avoided; it was apt to create an erroneous impression that a second operation had become necessary, in spite of the assured success of the first. The fewer the drops, the more simple and the less irritating the solutions or applications used, the better. Last, but not least, that unaccountable hurry to get the patient out of bed on the third or fourth day, and back at work by the end of the week, must be condemned. After a simple or radical mastoid operation a fortnight in bed should be the minimum amount of rest allowed to a human being who valued health and the organ of hearing.

Mr. ANDREW WYLLIE (London) agreed with Mr. Jenkins's procedure and reprobated the use of antiseptics during and after operation. He disapproved of packing a radical mastoid cavity, his own practice being to irrigate it gently each day with an unirritating lotion.

Mr. C. A. S. RIDOUT (Portsmouth) left a wide posterior opening in mastoidectomy, particularly when severe infection was present. After about ten days secondary suture might be performed. He had seen many entirely successful results of the modified radical operation, and considered that careful after-treatment had an important bearing on a subsequent perfect result.

Dr. SCOTT STEVENSON (London) said his practice was to perform the Schwartze operation in acute mastoiditis and to suture the wound. This did not imply that the wound was to remain closed for ever; if necessary the sutures were removed.

Dr. W. S. SYME (Glasgow) thought the success of the Schwartze operation depended very largely on the thoroughness with which the cells were dealt with. He believed in removing the tip of the mastoid, and was grateful to Professor von Neumann for drawing attention to the retrofacial recess

Sir WILLIAM MILLIGAN (Manchester) considered that, taking cases as a whole, it was better to have the wound open after a Schwartze operation. His experience was that hearing improved in many cases after the radical operation, and he held that an important item in procuring a good result was not to send the patient out of hospital too soon. He agreed that grafting shortened the after-treatment materially, robbed it of pain, and allowed the patient to go about his life again much sooner than he could otherwise do.

extreme upper end of the oesophagus, in the alleged Lannier-Hackerman weak area. Killian proved conclusively that there were no known museum specimens which supported this oft-quoted view. Killian also showed that the pouch in the early stages consisted, as held by Zenker and von Ziemssen, of the fibrous submucous and mucous coats only of the pharynx. The fact that muscular fibres are found round the neck of moderately advanced and larger specimens is, in my opinion, explained by the fact that the hernia, when it attains a large size, tugs on the margins of the separated oblique and transverse portions of the inferior constrictor, and thus enlarges the mouth of the sac by traction and pulls down some of the fibres around the neck.

As regards the statement that there is a weak triangle at the postero-superior aspect of the extreme upper end of the gullet, where the muscular fibres are stated to be either sparse or absent, this heresy owes its origin to Lannier and Hackerman, and has been repeated, on absolutely insufficient evidence, by many writers in textbooks and special articles. In 1910 Waggett and E. D. Davis made a number of examinations of exsected gullets in the *post-mortem* room, and conducted pressure experiments, and found that there was little warrant for such an assertion; as a matter of curiosity I repeated these observations and confirmed them.

The long and short of the matter is that what are usually known as Zenker's pulsion diverticula are entirely pharyngeal in origin, and do not bulge through either the pharyngo-oesophageal junction or through the extreme upper segment of the gullet in the region of the Lannier-Hackerman triangle, and any nomenclature which suggests any origin other than through Killian's dehiscence—that is, between the two portions of the crico-pharyngeus—is not warranted. Amongst writers who have promulgated the erroneous views that some pressure pouches occur in this situation *below* the lower margin of the inferior constrictor are Morell Mackenzie, Butlin, Zesas, Knott, Halstead, Starck, Stetten, and the majority of British and foreign writers on the subject, down to contributions this year by Shallow and Chevalier Jackson. John Morley, like StClair Thomson in his authoritative *Handbook*, correctly describes these pouches in the text, but Morley, under the wrong title of diverticula of the oesophagus, and Thomson deals with them under the section devoted to oesophageal diseases. A recent notable exception deserves mention—namely, the paper on pharyngeal diverticula by Wilkie and Hartley in the *British Journal of Surgery* (1922), which is refreshingly free from the usual errors of fact and from misleading nomenclature.

Diagnostic Symptoms and Signs of Pharyngeal Pulsion Pouches.

The classical symptoms recorded by Rokitansky, and later by Zenker, well back in the last century, were so much to the point that they stand to-day. Dysphagia, intermittent in the early stages and very gradually getting worse and more constant after years; immediate regurgitation of food at times, as in other forms of stenosis of the pharynx and gullet, but associated also with slight regurgitation of portions of food long after a previous or a meal or even two before the last; variable discomfort in swallowing rather than any difficulty in getting down ample nourishment is the rule and this not merely in the early stages, so that extreme loss of flesh is most exceptional and slight loss not so frequent as might be expected, even when the pouch is of long standing; aphagia necessitating gastrostomy appears amongst the records of last century; gurgling noises due to the mingling of swallowed air with the food stagnating in the pouch; in advanced cases there may be an obvious, visible, and palpable swelling on one or other side of the neck, more usually the left; external pressure may lead to ejection of the contents when food is present in the pouch. Discomfort rarely amounting to actual pain may occur from temporary overdistension and imprisonment of ingesta in the sac. Pouch patients are also liable to get distressing fits of choking and coughing sometimes, becoming actually cyanosed when food ejected from the pouch finds its way out suddenly and overflows into the air passages. In a case described and illustrated by Robinson of Sunderland the pouch extended upwards towards the base of the skull behind the middle and upper pharynx as well as a long distance downwards behind the gullet, and when the patient swallowed water the neck swelled out laterally like the pouter pigeon, and for a few minutes at times presented the appearance of goitre.

A stricture high up in the gullet may exceptionally bear a superficial resemblance in symptoms, for a time, to a pouch, but a definite diagnosis can always be made, when efficiently carried out in the correct position, by an *x*-ray examination in conjunction with barium or bismuth paste. It is often useful partially to fill the sac through a rubber tube with paste instead of allowing the patient to swallow it. The endoscopic findings are characteristic but rarely really necessary for diagnostic purposes alone. The orifice of the sac is easily seen through the endoscope, but the lumen in the deep pharynx leading to the mouth of the gullet is often difficult to find even by experts. It can, however, be located by the swallowing of a shotted string.

Treatment of Deep Pharyngeal Pulsion Pouches.

When Zenker wrote his articles in 1876 and 1877 the only treatment recommended when the condition of the patient approached aphagia, and when there was failure to insert easily a rubber or gum-elastic feeding tube through the prolapsed pharyngo-oesophageal orifice into the gullet, was the performance of gastrostomy. He and von Zeimssen wrote, however, as follows:

> "The radical cure of diverticula by operative procedure from without is one of our vain wishes; yet we should hope that even this operation conducted on Lister's plan might at some future day be performed without danger."

This "vain wish," first suggested by Kunge in 1864, and then by Hamburger in 1871, and attempted, but not with survival of the patient, by Niehans in 1884, was first successfully realized by Wheeler of Dublin in 1886, when he encountered a deep pharyngeal pulsion pouch whilst removing an enormous congenital lateral pouch or aerocele, and he promptly excised both. Zesas and Niehans, von Bergman, Kocher, and Butlin repeated this operation between 1888 and 1892, and primary excision has remained the method of choice in the main ever since. A few operators—for example, Stetten—recommend a preliminary gastrostomy. This appears to me to be neither necessary nor even justifiable; at all events my seven cases were successful without it.

Primary excision of the pouch through a cervical incision along the anterior border of the left sterno-mastoid and dissecting down to the side of the pharynx and gullet, severing the omo-hyoid muscle, tying the superior thyroid vessels, and displacing the left lobe of the thyroid gland, is a comparatively easy procedure, and has been described in detail by Butlin and others. Operation should always be preceded by what the earlier operators called the "toilet of the pouch"—namely, washing it out clean with some mild antiseptic beforehand. A bougie in the sac and another in the gullet considerably helps to define these structures and aids in the subsequent separation of the pouch by blunt dissection. If a bougie does not pass readily into the gullet beforehand, it can easily be manipulated into it when the deep preliminary dissection to the region of the side of the gullet is made. When the pouch has been freed from its bed considerable difference of opinion prevails as to the method of cutting through the neck close to Killian's area of dehiscence. I think, however, that simple incision is sufficient, though some operators still prefer to ligature the neck first, and divide it distally with the electric cautery knife.

The crux of the whole operation depends largely on the method of sewing up the orifice left when the pouch has been removed. Formerly the mucosa was invaginated and the fibrous coat sewn up by Lembert's method of suture. At the present day, however, most operators resort to some form of purse-string suture. The method of Wilkie and Hartley will be alluded to later. John Morley advocates the technique adopted in closing a duodenal stump in a Polya gastrectomy, and considers that excision of a pulsion diverticulum "should only be attempted by those who have

clavicle below and the middle line over the thyroid cartilage in front. The stalk was traced upwards between the two carotids, and entered the pharynx in a space bounded by the palato-pharyngeus and the stylo-pharyngeus laterally and the middle and superior constrictors above and below. This diverticulum, Wheeler states, could be traced to the right sinus pyriformis, and the opening was apparently large in contrast to that of the lesions described by Watson and by Godlee. After removing this sac Wheeler unexpectedly discovered another diverticulum lower down, originating posteriorly from the deep pharynx and passing down behind the oesophagus. This true pharyngeal pulsion diverticulum was the size of a walnut, and was removed. Wheeler had, therefore, in 1886, the distinction of being the first to operate on, and to remove successfully, a congenital lateral pharyngeal diverticulum, and to be the first to remove a pharyngeal pulsion diverticulum with survival and cure of the patient; though the latter procedure of excising a pulsion pouch had been previously (in 1884) performed by Niehans and von Burckhardt, but with a fatal result in each instance.

These diverticula, though more commonly having a small opening in the region of the posterior faucial pillar just behind the tonsil, may, as in Wheeler's case, open lower down; the neck in Godlee's case passed through the lateral part of the thyro-hyoid membrane, and in another instance the opening was large enough to admit a finger somewhere in the region of the glosso-epiglottic fossa. Although the records describe these sacs as containing air and some secretions, and in one instance grumous material, it would be imagined that, where the pharyngeal opening happens to be large, food must sometimes get in; but perhaps there is a valvular condition of the orifice which prevents this happening as a rule. Certain it is that the presence of food in the sacs is not mentioned in any of the records I have consulted; but I cannot claim that my search has been exhaustive.

HISTORICAL NOTES ON PULSION DIVERTICULA OF THE DEEP PHARYNX.

According to Zenker the first recorded case of such a pouch was made by an Englishman (Ludlow) in 1764, and the specimen, a large one which extended into the thorax, is preserved in the Hunterian Museum of the Royal College of Surgeons. Zenker and von Ziemssen give references to no fewer than twenty-two cases, in which the diagnosis was rendered unequivocal by *post-mortem* examination, which were recorded between 1746 and 1879, and they add five cases of their own in the same category. In this list are included four English cases—namely, Ludlow's mentioned above, and one by Sir Charles Bell in 1816, one by Worthington in 1846, and one by Ogle (which is in the St. George's Hospital Museum) in 1865. Zenker also refers to seven recorded cases, in which, however, there was no autopsy, including one described by Dendy in 1848 and another described in the *Edinburgh Medical Journal* in 1856.

I have already alluded to the important case reported by Wheeler of Dublin in 1886, which was of especial interest in that it was not only the first one cured by surgical removal by a lateral incision, but the case was complicated by, and operation was undertaken for the removal of, a very large congenital lateral post-faucial diverticulum of congenital embryonic branchial cleft origin. The lower pharyngeal diverticulum was unsuspected, and only discovered during the course of the operation, and of course it was removed at the same time as the large lateral air pouch.

The first description, in any way approaching accuracy, of diverticula in the region under discussion dates from a communication by Mondirre in 1833. In 1840 Rokitansky placed the subject on a sure basis. He it was who classified these pouches under two main headings—namely: (1) pulsion or pressure pouches, and (2) traction pouches. Although he devoted most attention to, and laid the foundation of our knowledge of, traction pouches of the middle region of the oesophagus, he showed remarkable perspicuity in pointing out that the pulsion pouches found high up really originated from the lower pharynx. Yet in spite of this clear statement, and the fact that the point was emphasized in 1887 by Zenker, these pulsion diverticula of Rokitansky, originating high up in the alimentary tract, have been almost habitually included under the heading of "Diseases of the oesophagus," and have been described as originating either at the extreme upper end of the gullet or else at the pharyngo-oesophageal junction, and the importance of Killian's dehiscence in the inferior constrictor, with hernia of the mucous membrane through the same, has been almost ignored even to the present day.

After Rokitansky, the next comprehensive and really illuminating account of diverticula of the pharynx and of the gullet was set forth with, on the whole, considerable accuracy by Zenker, writing independently in 1876, and also in collaboration with von Ziemssen in 1877, in the *Encyclopaedia of Medical Practice*, edited by the latter, the English edition of which appeared so far back as 1878. In volume viii of this work, under the section dealing with diseases of the oesophagus, they included, it is true, diverticula of the pharynx, for they write:

> "In a careful investigation of the subject we must overstep the true limit of the oesophagus and consider also the lower portion of the pharynx at the same time, since some of these diverticula, strictly speaking, belong to the pharynx. . . . In the literature such pharyngeal diverticula are repeatedly and erroneously described as oesophageal."

This statement is surely sufficiently definite, yet even at the present day this erroneous nomenclature as regards these herniae of the pharynx is perpetuated in our text-books, both general and special, and in the report of cases in current journals. Zenker, following Rokitansky, divided diverticula in the upper food tract into those resulting from (1) pulsion and (2) traction, and stated that the two forms "are so totally distinct and different that it is impossible by grouping them to give a general description of the disease. Although this has been done by nearly all writers, excepting only Rokitansky and Heschl." Zenker thought that pressure—that is, pulsion—diverticula were limited to the upper part of the alimentary tract, corresponding to the true pharyngeal diverticula, and that traction diverticula were limited to the gullet. The latter statement is apparently true, but it is not a fact that pressure diverticula do not occur far remote from the pharynx—that is, unequivocably in the oesophagus, and mostly in the middle third, but exceptionally both high up and quite low down. In reference to pressure diverticula, however, they state later that "they are located, as it appears, exclusively (certainly only with rare exceptions) at the lowest part of the pharynx just at the upper boundary" Although it turns out they were here right in not postulating too absolutely that these pulsion pouches were limited to the pharynx, they were not strictly accurate in placing them "at the lowest part of the pharynx just at the upper boundary of the oesophagus," for the pouches really originate, as was first definitely shown by Killian, at the junction of the oblique and transverse fibres of the inferior constrictor (crico-pharyngeus) muscle and at least a centimetre above, not "just at the upper boundary of the oesophagus." Zenker, however, fully realized that the pouch was, in many cases at all events, surrounded at its neck *only* by "the transverse continuous fibres of the inferior constrictor muscle of the pharynx"; and further on in the article Zenker, in alluding to his dissections, disposed of the erroneous statement of others that the pouch has a muscular coat, more especially in the smaller sacs (Klebs); he and von Ziemssen assert this view to "be untenable when we consider the arrangement and origin of the fibres of the inferior constrictor through which the mucous coat passes."

In spite of this clear statement that these herniae of the lower pharynx pass through the fibres of the inferior constrictor, many writers (from Butlin in 1893 down to those of the present day—for example, Chevalier Jackson, Shallow, and the Mayo staff) have taught that they are at times situated at the junction of the pharynx and gullet, and imply that they are as much oesophageal as pharyngeal in origin in some instances. In my opinion they are wrong.

Others, again, have considered that some of these pouches originated definitely just below the lower margin of the pharynx and through the posterior wall of the

its wall; before stitching the pouch up I pass a catgut ligature around the neck of the sac, but do not draw it sufficiently tightly to produce strangulation. The object of this is to prevent food entering the pouch in the first weeks following operation.

For a very large intrathoracic pouch, really too long for successful suspension, it might be advisable to do the second stage of the Goldmann operation if a radiographic examination showed that the pouch was inclined to prolapse after a short period. I do not recommend the operation for a small walnut-sized pouch, as in the only case in which I did a "pexy" in such circumstances the symptoms recurred from prolapse a year later, and I then resorted to excision. The method, therefore, is probably liable to fail in extremely long pouches extending well down into the chest, and also in rather small pouches. In addition to the case of the small pouch which recurred, I have done four other cases of suspension, with complete relief in each up to the present—that is, for five years or more. I also assisted Sir James Dundas-Grant in dealing with a rather long pouch by this method. There is, of course, no chance of leakage if the wall of the sac has not been perforated by suture and the dreaded mediastinitis is eliminated.

The cause of dysphagia in these diverticular cases is not, as is usually held, so much due to pressure on the oesophagus from behind by food in the pouch, as to prolapse or downward displacement of Killian's lip, which forms the lower border of the mouth of the pouch; this prolapse displaces the plane of the pharyngo-oesophageal junction from a horizontal into a more or less vertical plane, and prevents the normal opening up of the mouth of the gullet during deglutition. The suspension and fixation upwards of the pouch corrects this marked prolapse and draws up Killian's lip together with the posterior wall of the cervical gullet, into its normal position, and the patients are able to swallow normally the same evening in most instances. The prolapse of Killian's lip is well shown in museum specimens, but the point has not, I think, been previously emphasized.

FIG. 2.

FIG. 3.

FIG. 2.—Typical traction diverticulum of the oesophagus.

FIG. 3.—Interior of the same oesophagus showing the mouth of the diverticulum situated well below the level of the bronchial glands.

Morley states that I and König advise suspension by suturing the sac to the hyoid bone or to the omo-hyoid muscle; that is the method described in 1922 by König, but has not been hitherto carried out by me. It may be worth while to use these points as additional attachments for the pouch.

Of course, the tendency of most "pexies" is to recur, but this only happened to me in the one instance of the small pouch above mentioned.

TRUE DIVERTICULA OF THE OESOPHAGUS: THEIR ETIOLOGY, SYMPTOMS, AND TREATMENT.

Very few pouches in the gullet have been recorded other than the traction diverticula of Rokitansky behind the roots of the lungs; whether these latter are as prevalent as he asserted, though latent, and whether they are so often as he believed, the determining factor in serious lung and pleural abscesses and in mediastinitis, when decaying food is retained, is still a moot point.

Traction diverticula are usually unsuspected till found at necropsies; their cause is, on the other hand, evident, as they can always be traced to a previous breaking down of a suppurating lymph gland which forms an inflammatory adhesion to the outside of the wall of the gullet, which gets dragged out of position by subsequent healing and cicatricial contraction. They are rarely observed at any spot other than in the middle third of the gullet behind the area of the glands in relation to the bronchi and trachea. Jackson has, however, recorded a traction diverticulum of the supraclavicular gullet, and they have also been observed low down near the diaphragm, presumably from the adhesion of breaking down mediastinal glands. Traction pouches, which are normally narrow funnels, may very exceptionally become greatly expanded by food lodging in them, and when this stagnation ectasia happens we have the traction-pulsion diverticula of Starck.

The rare true pulsion diverticula of the gullet, which occur usually in the lower half, though occasionally higher up, may sometimes be due to increased deglutitory pressure when there is either a benign inflammatory or a functional stricture of the gullet, as suggested by Hurst, but this would hardly apply to such pouches higher up, or where there is no obvious stricture. When pressure pouches are associated with and result from functional or from cicatricial stricture at the level of the diaphragm the treatment is obviously that of relieving the causal obstruction. Pouches which have no underlying stricture in the gullet, excepting Leugart's variety, do not themselves appear to have often any recognizable symptoms; they are at times accidentally discovered either at necropsy or when making radiographic or oesophagoscopic investigations, and there is no *ad hoc* surgical or other treatment either necessary or even possible beyond, perhaps, lavage.

Leugart's pouching is extremely rare. I have only seen one well marked example—namely, in a case I was asked to examine with Atkinson at the Central Throat and Ear Hospital. In this case there was a well marked lateral recess in association with a prominent horizontal ledge projecting internally from the anterior and left lateral wall of the gullet at the level of the left bronchus. Both Leugart himself and Halstead thought that the gullet was actually compressed by the left bronchus itself in these cases; this is obviously wrong, as the ledge passes backwards and to the left, which is not in any way the direction of the left bronchus, of course, and the latter never comes directly in relation with the wall of the oesophagus. I think the probable explanation is that contracting connective tissue bands pass from the bronchus outwards and backwards to the left side of the body of that dorsal vertebra which lies behind the gullet at the level of the left bronchus. I have on many occasions when making an endoscopic examination observed a slight ledge in this position, and it is so frequent as to have been alluded to as marking the site of the alleged bronchial constriction of the gullet. The enlargement of this not uncommon, though usually slight, ledge so as to intercept large, fairly undivided portions of ingesta—for example, large portions of potato—is very rarely observed, but in time a recess may form in which solid portions of food get arrested, pouching follows, and slight dysphagia is observed; at least, that is what apparently happened in Atkinson's patient. Here, again, cutting endo-oesophageal surgery is not advisable, but the passage of large bougies might possibly be useful, or else stretching by Brüning's dilator.

To render this review comprehensive I must not omit to mention that a dissecting diverticulum has been recorded passing down between the coats of the gullet. This condition probably resulted from ulceration down to the muscular coat, and subsequent separation of the coats by pulsion.

Another rare form is a narrow diverticular sinus of varying length and unknown origin, though traumatism, or ulceration, may be suspected. I had an instance of this lesion an inch and a half long, which passed backwards, downwards, and outwards near to and parallel with the diaphragm, *post mortem* in a case of phreno-cardiac stenosis.

To sum up: diverticula of the gullet, in contrast to diverticula in the pharynx, are rarely suspected during life, rarely cause obvious symptoms, and are rarely susceptible of or influenced by any treatment, even should they accidentally be discovered during life. We hear very little of them, and for the above very obvious reasons.

served a long apprenticeship to the technique of gastro-intestinal surgery." It would be thought that familiarity with the surgical anatomy and experience in surgical operations in this region of the neck were rather essential to operative confidence and success, and that one need not be an abdominal surgeon to carry out any method of suture for closure of the hiatus, in the lower pharynx, left after excision of the diverticulum.

Several alternatives to simple primary excision have been either advocated merely or else actually carried out. The former include painting the interior of the sac with silver nitrate (Dendy); dissecting out the sac free from its bed by a lateral incision, and then invaginating it into the food tract (Girard); the orifice being stitched up posteriorly to endeavour to prevent recurrence to the original position, which, however, has occurred sooner or later in several cases, and the method has fallen into disfavour on that account. Another method advocated, but not carried out, was that of Chevalier Jackson, of passing a volsella through the endoscope down to the interior surface of the fundus and endeavouring to perform internal traction invagination into the pharynx without making an external cervical approach. As I remarked in reviewing Jackson's larger work twelve years ago, the suggestion showed that he had no experience of dissecting out a pouch free of its adhesions, or he would have known that the latter would not yield to internal traction.

Statistics compiled by Stetten in 1910 showed that there was a mortality of no less than seven in the first thirty recorded cases of simple primary excision alone, though carried out by first-rate general surgeons for the most part. This high mortality of over 23 per cent. would probably have been greatly exceeded if he could have got at the number of unrecorded fatal cases. It is, however, significant that there were only two deaths in the next eighteen recorded cases, and, on the other hand, Stetten found that of five other cases, in which primary excision was preceded by gastrostomy, there was only one death, and that was avoidable probably, because obviously due to very injudicious after-treatment. Stetten recommends this preliminary measure which he himself followed, but I regard it as only exceptionally justifiable.

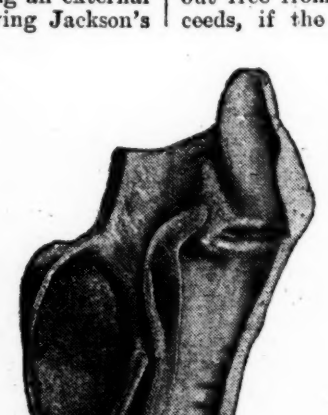

FIG. 1.—Typical posterior pharyngeal pulsion diverticulum showing the marked prolapse of Killian's lip.

It was probably the high mortality that led up to the Goldmann operation of removing the pouch in two stages.

The two-stage excision is generally credited with having been first successfully carried out by Goldmann in 1907, but Halstead, in his article in *Surgical Clinics of Chicago* in 1919, claims that he first practised it, though he gives no reference to priority of publication over Goldmann, who recorded two successful cases in 1907. It does not appear to have been performed very frequently on the whole, though some operators prefer it in all cases, but others especially reserve it for very large pulsion pouches (Colledge).

The first stage of Goldmann's operation consisted of freeing the pouch from its bed by an incision along the anterior border of the sterno-mastoid and subsequent dissection as in the operation for the primary excision; instead, however, of cutting off the pouch at its neck, it was turned up with the fundus above, and the latter was stitched up to the upper angle of the operation field, the neck was lightly constricted with catgut, and the skin incision was then sewn up except at its lower end. Ten or more days afterwards, when the cervical lymphatics were presumed to have been sealed and the risks of mediastinal infection reduced, should subsequent leakage occur, the wound was reopened, the pouch excised, the neck suitably sutured, and closed as in the operation of simple primary excision.

Subsequently Goldmann tried a modification of this method: the pouch having been dissected free, a catgut was tightly—not lightly as in the first method—tied round the neck of the pouch so as to ensure strangulation and necrosis of the pouch, which was packed up with gauze high up in the wound; the skin incision was only partially sewn up, being left open at the upper as well as at the lower end. The second stage consisted in removing the pouch when it had separated at its neck by sloughing a week or two later. This, of course, meant leakage. It was a dirty procedure and proved not to be free from risk, though Marsik and others adopted it for a time. When the Goldmann two-stage method is mentioned to-day it is the first type which is usually referred to.

Wilkie and Hartley modified the first Goldmann operation, which they prefer to primary excision, by incising the pouch and performing a submucous resection of the mucosa, which they remove, leaving the fibrous coat, which they then invaginate and sew up by purse-string sutures.

Bevan's method of obliterating the cavity of the pouch without excision, in order to reduce the risk of leakage, is theoretically ingenious. The sac having been dissected out free from its bed under local anaesthesia, Bevan proceeds, if the pouch is of moderate size, not more than 2 inches long, "to invaginate with three purse-string sutures of black silk or Pagenstecher linen one-half of the diverticulum into the other half, then the rest of the diverticulum should be obliterated by longitudinal sutures, six or eight, running parallel with the long axis of the diverticulum." When the operation is completed the area of the mouth of the pouch at Killian's dehiscence presents as a firm rounded button or knob on the posterior surface of the lower pharynx. In dealing with a large long diverticulum another method is employed by Bevan.

"The diverticulum can be crushed at its centre with a pair of heavy forceps, tied with a silk ligature, and the portion distant to the ligature cut off with the electric cautery. The remains of the diverticulum which are then no larger than one's thumb can be treated by invaginating them into the oesophagus" (meaning pharynx) "with three purse-strings just as we handle the smaller diverticula."

The patient is fed by a feeding tube passed for each meal for ten days.

Bevan does not allude to any cases in which these operations have been carried out, so we know nothing as to whether they were successful for a time, or whether there was any recurrence of symptoms, as occurs sometimes after Girard's invagination; nor is anything said about subsequent leakage ever having happened. The latter would appear to be not unlikely in any but a pouch with an extremely thick wall instead of the usual thin wall; and considering that from nine to eleven sutures are inserted it seems extremely likely that the wall would be perforated, and possibly leakage and sepsis result. In the significant absence of any statistical record of the cases operated on and the immediate and remote results, judgement must be suspended as to the value or otherwise of Bevan's really ingenious proposals.

My operation of upward suspension and fixation of the freed and inverted pouch was described under the name of "diverticulopexy" in connexion with a case in which I carried out this operation, shown at the Laryngological Section of the Royal Society of Medicine in 1917 and recorded in the *Proceedings* in 1918. It consists essentially of the first stage of the Goldmann operation. The pouch having been freed from its bed by dissection and isolated is then turned down-side up and the fundus stitched up as high as possible to the upper angle of the operative field by sutures to the side of the pharynx and to the deep cervical fascia under the sterno-mastoid. In order that stitches shall not perforate the sac wall and shall hold at, it is essential not to make a clean dissection of the sac, but to leave as much areolar tissue as possible adherent to

I desire to acknowledge my indebtedness to Dr. Irwin Moore for the use of the original drawings from which the figures illustrating this paper have been reproduced.

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LARGE PHARYNGEAL DIVERTICULA.

BY

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THE following details relate to two patients with large pharyngeal pouches of long standing which had not been operated upon. The first had been present for over forty years.

CASE I.

The patient was a man, aged 76, who sought admission to Ruthin Castle early in 1924, for an affection of one hip-joint, stating that he was otherwise in good health. When giving his history he said that a pressure pouch of the oesophagus had been diagnosed by Sir (then Mr.) Henry Butlin, thirty-eight years before. He had managed the pouch for the whole of this time, the only serious disadvantage being that occasionally at a meal it might discharge involuntarily through the nose. This accident was rare and often did not occur for several months, but the fear of it is present when he is obliged to dine in public rooms in hotels or on a ship. He had lived a very active life, travelling, riding to hounds, and walking long distances, even recently as much as twenty-five miles a day.

With a barium meal a large pouch of clear outline can be seen extending into the thorax as low as the fourth vertebra and below the level of the aortic arch (Fig. 1). It is a little more to the right side than the left.

The procedure which the patient has evolved for managing the pouch is as follows: he retires after each meal, bends forward and makes an effort to increase intrathoracic pressure, putting the closed hand, the back of the first phalanges, against the left side of the neck above the clavicle, and ejects part of the contents of the pouch through the mouth. He then takes a glass of water, evacuates again, and is comfortable and safe from disturbance.

Since the lower part of the pouch is not mainly on the left, it appears that the placing of the back of the hand on that side probably supports the upper part of the pouch or protects a weak place, and this aids in raising thoracic pressure without discomfort. When this procedure was carried out with a barium and buttermilk meal, the first evacuation got rid of three-quarters to four-fifths of the contents of the diverticulum (Fig. 2).

With subsequent meals the glass of water was taken as usual, but some barium returned at the end of the day. The patient believes, however, that with ordinary food there is complete emptying after each meal. In a recent letter to my colleague Dr. Anderson this patient states, for the benefit of anyone in a similar plight, the result of his forty years' experience as follows:

1. All food left in the pouch must be expelled within a few minutes after a meal and the throat gargled with cold water.
2. The saliva should be expelled also before getting into bed.
3. Alcohol must be regarded as a poison; "I allow myself one glass of Madeira to my dinner, however."
4. Beef should be avoided unless minced.
5. Devonshire cream is recommended as a good lubricant which is well borne.

CASE II.

In this patient, a man aged 70, also not operated upon, the symptoms dated back sixteen years. It was first noticed that food began to be arrested on swallowing, and that a piece of meat would return. Twelve years later—that is, four years ago—the symptoms became worse and weight was lost. At the time of the first consultation twenty months ago he could take only soft food, mainly cereal, with milk, milk pudding, butter, bacon fat, and some fruit pulp. Food tended to come back and had to be swallowed again or rejected. Fits of choking occurred, when food might return through the nose. The pouch could be emptied voluntarily. On one occasion this was done in my presence. About half a pint of brown fluid was produced, with the odour of coffee; some fat was floating on the surface. The fluid was acid to litmus, but contained no free acid.

On *x*-ray examination with a barium meal a large pouch was seen which, in an antero-posterior view, extended into the thorax well beneath the level of the clavicles as low as the fourth dorsal vertebra, most of it being to the right side of the middle line. It was irregular in outline. In the lateral view it can be seen to come below the level of the aortic arch. The mouth of the diverticulum appeared to arise from the posterior part of the pharynx just above the junction of the gullet. It was found on the *x*-ray table that food passed into the oesophagus more easily in the prone position (Figs. 3, 4, and 5).

This patient was recommended to take food lying forward on the right side. A year later he was holding his own; the weight was the same and he had little discomfort. He found it better not to empty the pouch during the day, as if it were kept full food would pass over it into the stomach. It was then emptied each evening after the last meal.

These were regarded as pressure pouches. Such diverticula have been called congenital, just as have the diverticula arising from the second part of the duodenum, and with no more evidence. They both arise in adult life at a part of the alimentary tube where there are frequent rises of pressure from the contraction of the muscular tube above and where the tube is weak from the divergence of muscular fibres. There may be a sphincteric contraction below, as described by Wilkie and Hartley.[1] When the pharyngeal pouch is once formed we may add to these factors a definite obstruction below; for the neck of the filled pouch will pull upon the gullet at its origin (Fig. 5, lateral view). During swallowing the lower part of the pharynx then becomes a closed cavity, the pressure in which will distend the diverticulum more and more.

In neither case was there any unpleasantness or putrefaction in the contents of the pouch.

Both of these men would be much better off had the pouch been successfully removed. In the first case operation was refused by the patient many years ago. His last consultation with Mr. Butlin was about 1893. At that time he was told that the mortality of the operation was about 50 per cent. It must be admitted that he has done well by his own methods. He does not suffer, casual acquaintances have no idea of the disability, and he has lived, and still lives, an active interesting life.

In the second case failure of nutrition set in definitely four years ago, but on considering the patient's age and physique, two surgeons advised independently against operation. By experiment and observation, including the finding out in the *x*-ray room in what position food entered the oesophagus most easily, the patient (who is a retired medical man) and his advisers have evolved simple means of diet and living which have enabled him to hold his own.

The photographs shown are by Mr. O. A. Marxer.

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[1] D. P. D. Wilkie and J. N. J. Hartley: *Brit. Journ. Surg.*, 1922, x, 83.

DISCUSSION.

Dr. IRWIN MOORE (London) agreed with Dr. William Hill that such diverticula should not be described as oesophageal. The site at which a pressure pouch originated was in every case so definite and constant—namely, the posterior wall of the deep pharynx, between the oblique and transverse fibres of the crico-pharyngeus muscle—that there was no reason whatever why such pouches should be described as other than pharyngeal. Again, frequent endoscopic examinations had confirmed the fact that the slit-like opening of the lower pharyngeal orifice was always situated at a slightly lower level than the mouth of the pouch, which was definite proof that such pouches were pharyngeal in origin. Their lateral relationship to the oesophagus was probably the reason why they were frequently and erroneously described as oesophageal.

FIG. 1.

FIG. 2.

FIG. 3.

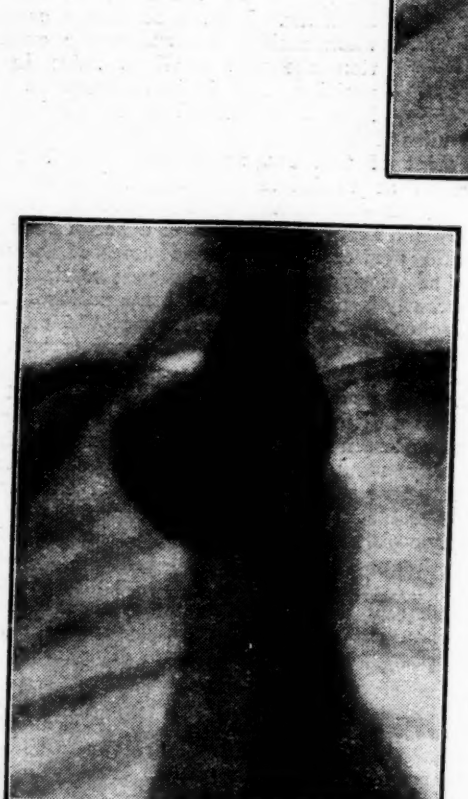

FIG. 4.

FIG. 5.

indigestion and constipation for years. This case was not examined endoscopically at the advice and wish of her physician, but was diagnosed by *x* rays.

Treatment for this patient's indigestion was prescribed and she was recommended to live on soft foods, also to swallow her food slowly and in small quantities.

In October, 1916, the patient wrote that her swallowing was no worse, though the "catching of food" was just the same. She was taking ordinary food, but had to eat and swallow very carefully or food might stick. There was no regurgitation of food. She had noises during swallowing, but mostly when lying down. She not only looked but felt very well. Dr. Soltau Fenwick wrote on July 2nd of this year that he had not seen her since 1916, but that he had heard that the symptoms had not increased. This patient is now 88 years of age.

These two cases showed that attention to feeding and digestion might be all that was required in some cases to improve the distressing symptoms caused by pharyngeal pouches and to prolong life, and that operative procedures might not be necessary in a number of cases.

Dr. Irwin Moore expressed the opinion—judging from the appearance of the *x* rays—that the case of a large pharyngeal pouch exhibited by Mr. Bell Tawse at the previous day's clinical meeting might be similar to an unusual specimen of a pharynx which he had come across in the museum of University College Hospital, and had been removed *post mortem* from a patient, aged 76, who had been under the care of Sir Rickman Godlee, and who died from bronchitis and pneumonia. To the lower extremity of this pharynx a pouch was attached measuring vertically 2 inches and from side to side $2\frac{3}{4}$ inches. The speaker was struck with the unusual appearance of the pouch in this specimen, which had not been well dissected, and obtained permission from Mr. Lawrence to investigate the specimen with Professor Shattock, who carefully dissected the sac and bisected the specimen.* In this specimen the pouch, which was particularly capacious, was unusual in that it rose as high as the upper level of the cricoid plate, and had a mouth of exceptional size. Like the summit of the pouch, the upper edge of its mouth lay at the same level; the sac involved much of the lateral as well as the posterior walls of the pharynx.

Dr. Irwin Moore considered that in Mr. Tawse's case a careful endoscopic examination with a medium-sized oesophageal tube which could be orientated would decide the actual size of the pouch opening and settle the question of operation. Again, a full lateral *x*-ray photograph would also help to decide the size of the pouch mouth, for in this position a much more accurate picture was obtained than in the anterior, antero-lateral, or posterior position.

The danger of an oesophagoscopic examination, or of dilating an oesophageal stricture co-existing with a pharyngeal pouch, should not be overlooked in these cases, for the oesophagoscopic tube invariably entered the pouch, and considerable difficulty might be experienced in finding the slit-like oesophageal lumen. If the mucous wall of the pouch was very thin, as might be the case, it was extremely easy to perforate the sac with the tube. This risk was well shown in the case of a male patient, aged 71, who died from mediastinitis forty-eight hours after the endoscopic passage of a bougie for a supposed co-existing oesophageal stricture; the bougie perforated the sac wall. When this patient was first examined by *x* rays with a bismuth feed, the bismuth was seen, in the first instance, to enter the oesophagus with difficulty—that is, a spasm occurred at the sphincter opening—and very little food passed down the oesophagus. After a few seconds the rounded shadow of the pouch could be clearly seen. When this had fully filled up, the passage of the bismuth down the oesophagus appeared to be facilitated, and the spasmodic movements observed at the commencement of the examination ceased. The bismuth remained in the pouch during the whole of the examination—from the commencement to the time the plates were taken—occupying about half an hour. The *x*-ray pictures were taken in two positions—namely, antero-posterior and left antero-lateral oblique. In the latter position there appeared to be a constriction at the entrance to the pouch. There was a distinct gap in the bismuth shadow below the pouch, then a fairly wide shadow continuing down for about an inch. A slight constriction at this point gave the impression that there might be a narrowing of the lumen, hence the suggestion of a possible stricture of the oesophagus below the pouch. At necropsy the wall of the pouch was found to be so thin that it seemed surprising that spontaneous rupture had not previously taken place. The diameter of the oesophagus was found to be so reduced that it would only admit the little finger; it measured 14 mm. (nine-sixteenths of an inch). Dr. Irwin Moore considered this case of great interest in supporting the view that the predisposing cause and starting of a pharyngeal pouch was a spasmodic contracture of the crico-pharyngeus muscle.

Mr. LIONEL COLLEDGE (London) said he bore a message from Sir StClair Thomson, who regretted that he was prevented from attending the meeting by an attack of gout. Sir StClair had received a courteous rebuke from Dr. William Hill for including "pouches" under "diseases of the oesophagus" in the new edition of his textbook. Sir StClair was well aware of the pathological anatomy of the condition, but declined to be bound by any particular method of classification. The symptoms were oesophageal, and in a book which was essentially clinical in its outlook he preferred, after careful consideration, to rely on a clinical rather than on a pathological classification, which might even savour of pedantry in such circumstances.

Mr. KELSON (London) described the treatment of two cases by excision without subsequent leakage. One patient lived for four years and died of bronchitis; the other lived for a longer period and died of malignant disease.

Mr. E. D. D. DAVIS (London) said that the pathology of the propulsion pouch was similar to that of hernia, and was related to the weakness of the pharyngeal wall between the fibres of the inferior constrictor. Mr. Waggett considered that the increased pressure was due to swallowing and inco-ordination of swallowing with a spasm of the crico-pharyngeus muscle; most of these patients gave a history of dysphagia of long duration. The treatment was that of the radical cure for hernia. In any type of operation the weakness of the pharyngeal wall must be strengthened. In excision recurrence had followed in several cases, and after excision the wound in the pharynx should be carefully sealed and the sterno-mastoid pulled over and stitched over the opening. Diverticulopexy had failed in some cases, and in one case the pouch sloughed and a fistula resulted. Girard's or Bevan's method of inversion had also failed and recurrence ensued.

The PRESIDENT (Dr. Brown Kelly, Glasgow) referred to the symptoms of saliva in the throat and a gurgling noise on swallowing being useful in diagnosis. It was important to remember that operation was undertaken on account of serious symptoms such as dysphagia and loss of weight, rather than for the purpose of removing the pouch *per se*. Some patients possessing pouches consumed all manner of food and reported no loss in weight. He had been rather surprised that Dr. Hill did not pay more attention to endoscopic diagnosis than to *x* rays.

Dr. HILL, in reply to a question by the President, whether primary excision was to be considered as the operation of choice, said that in his historical review of operative methods down to 1892 he had stated that primary excision had remained in the main the method of choice ever since. He had in view the point that it was the choice of the majority of operators. Personally he preferred fixation suspension in suitable cases. Comment had also been made on the fact that no stress had been laid on endoscopy as a diagnostic method. Dr. Hill's view was that the diagnosis could be confirmed by endoscopy, but it might be dispensed with in all but doubtful cases, since a survey of the classical symptoms confirmed by radiographic findings was absolutely definite for purposes of diagnosis in most cases. The suggestion of Keith, mentioned by Dr. Irwin Moore, that "pneumatocele" was a preferable term to "aerocele," he was prepared to accept, but he could not agree with the suggestion of Dr. Moore, following Sir Arthur Keith, that the pneumatocele recorded by Godlee and Bucknill was a

Cancer!

*By arrangement with Mr. Lawrence one half of the specimen was returned to the museum of University College Hospital, while the other half was included in the museum of the Royal College of Surgeons.

Dr. Irwin Moore pointed out that Dr. Hill had omitted to include in his classification acute diverticula, which were, however, very rare. Hoffmann in 1899 had recorded such a condition in a man, aged 31, who died after accidentally swallowing a piece of china. At necropsy an opening was found in the "upper region of the oesophagus" (? deep pharynx) which was lined with mucous membrane. Again, Dr. Hill had not mentioned artificial pouches, produced by habitual criminals in India for the purpose of concealing stolen money. A specimen in the museum of St. Bartholomew's Hospital, removed after death from a convict, who had made a pouch in his throat for keeping money, showed a pouch formed by the prolongation downwards of the left sinus pyriformis. Lead weights, varying in weight from 12 to 70 grains, were used to increase the depth of the sinus pyriformis. These discs were attached by a piece of string to one of the teeth to prevent them from being swallowed. Criminals with coins secreted in these artificial pouches might be inverted and shaken without the coins coming away. Dr. Irwin Moore also pointed out that under the heading of "congenital lateral pharyngeal aeroceles of abnormal branchial cleft origin" Dr. Hill had included the case recorded as a "pharyngeal pouch" by Godlee and Bucknall, in 1901. This case appeared, however, to have been wrongly described by them, for it was undoubtedly a "laryngocele," since the sac contained air and its origin was laryngeal. The late Professor Shattock was of the opinion that, etymologically, the term "pneumatocele" would be a better term than "aerocele" in cases where it was thought desirable to indicate the fact that the sac contained air and not fluid. In a paper published in 1922 on "The so-called prolapse of the laryngeal ventricle and eversion of the sacculus laryngis" Dr. Irwin Moore had specially investigated this case with the help of Professor Shattock, and had come to the conclusion that there were no grounds for describing the tumour as a pharyngeal pouch. Professor Shattock also stated that, at the time the case was published, Professor Arthur Keith had expressed the opinion that it was an enlarged air sac. When first seen by Rickman Godlee and Bucknall the tumour looked like an enlarged thyroid gland on the left side of the neck at the level of the hyoid bone, and in front of the sterno-mastoid muscle. It was soft and tympanic on percussion, freely movable over the deeper parts, except at the top of the larynx, to which it was fixed, and the movements of which it followed during deglutition. Pressure caused diminution in size. When seen six months later the tumour had reached the middle line of the neck, and extended to the posterior border of the sterno-mastoid muscle up to the angle of the jaw and down to the clavicle. Not only did it give a tympanic note on percussion, but, on holding the breath and blowing, the patient could slightly inflate the tumour, producing a change in the percussion note. At operation the pedicle, which was secured and ligatured outside the larynx, passed through the thyro-hyoid membrane, and careful probing failed to discover an actual communication with the pharynx. This case therefore came obviously under the group of "laryngoceles"—a term introduced by Virchow in 1867 to describe those cases of thin-walled air sacs which arise in connexion with the laryngeal ventricle (pneumatocele of the sacculus laryngis).

Dr. Irwin Moore next referred to the etiology of pharyngeal pouches. Two hypotheses had been put forward: (1) that they were congenital, but no evidence had been submitted which supported this view; (2) failure of the circular muscle fibres of the crico-pharyngeus to relax in the process of deglutition—in other words, a spasm of the lower sphincter orifice of the pharynx, followed by arrest of the bolus of food and dilatation of the hypopharynx, giving rise to increase of intrapharyngeal tension, the upper portion of the inferior constrictor acting as a force-pump, and causing the mucosa to bulge at the part where there was admittedly the least muscular support. Pressure of the pouch when filled with fluid or food helped to increase the difficulty of swallowing and to increase the size of the pouch.

There was no question that the thinness of the wall of the gullet as a whole—in this position—was very marked as compared with its thicker walls lower down. In the speaker's opinion the latter view of the formation of these pouches was the correct one. The majority of these pouches had a narrow mouth and neck, the mouth averaging one inch in diameter. The relationship of the orifice of the pouch to the lower sphincter orifice of the pharynx was well shown in a view from above in a specimen in the museum of St. George's Hospital.

To illustrate further the position and formation of retraction pouches of the oesophagus Dr. Irwin Moore showed a drawing of a specimen in the museum of University College Hospital, to which the following description was attached:

"The pouch is in the anterior wall of the oesophagus, 3 cm. below the bifurcation of the trachea. It is of small size and its opening about 1 cm. in diameter. The interior is lined with normal mucous membrane. In the bifurcation of the trachea is a group of pigmented and calcareous glands, and to the lowest gland is adherent the apex of the conical protrusion of the muscular wall of the oesophagus which forms the pouch. From a man who died in University College Hospital of pulmonary tuberculosis."

With regard to the treatment of pharyngeal pouches, Dr. Hill had only dealt with the surgical and not with the medical treatment of these cases. Many surgeons had declared that only extirpation or other operative procedures could be recommended, and that without operation the case must inevitably go from bad to worse until starvation, sepsis in the neck, mediastinal abscess, or septic pneumonia ensued. Among a number of cases which had been through his hands there were two, which he had recorded, in which no operation had been performed, and it was interesting to note their later history.

CASE I.

The first patient, a lady aged 64, had consulted him, at the advice of Dr. Lewarne, Cricklade, in August, 1912. From her symptoms it was thought that she was suffering from malignant stricture of the oesophagus. She had been weakly since childhood, and for four years she had had difficulty in swallowing any dry food unless it was first moistened and softened. Tough or stringy meat had to be taken with gravy. All foods, and even liquids, had to be swallowed very carefully, slowly, and in small quantity, otherwise they caused irritation, coughing attacks, and regurgitation. She expectorated a considerable quantity of mucus, especially at night. Her weight was 10 st. 2 lb.

This case was first diagnosed under cocaine anaesthesia by the oesophagoscope. In passing through the cricoidal pharynx the tube entered a cavity posteriorly, with its walls lying in folds, coated with stale-smelling slime. The further progress of the tube was abruptly stopped, and no outlet could be found. On withdrawing the tube the slit-like opening of the lower pharyngeal orifice was seen anteriorly and at a lower level. The tube could be passed with great ease in and out of the posterior aperture, but could not be passed into the oesophagus. The diagnosis of a pouch was confirmed later by x rays and a bismuth meal, the swallowing of which was carefully watched. It was observed that the bismuth at first passed quickly out of the mouth for a short distance, then was suddenly held up. As more bismuth was swallowed the outline of the diverticulum became gradually depicted in the neck—situated almost centrally in the middle line. The upper border appeared to be situated at the level of the cricoid cartilage, and the lower extending downwards for 1½ to 2 in. As the pouch became overfilled and stretched with the bismuth a portion of the latter was seen to well over the top of the sac into the oesophagus, where it was momentarily delayed before descending slowly, but without further arrest into the stomach. This phenomenon occurred with every fresh mouthful of bismuth swallowed, and suggested that the walls of the pouch were contractile, but further investigation proved that the patient emptied the pouch by contracting the muscles of the neck.

This patient was advised to live on soft food, to eat very slowly, and have the pouch washed out occasionally. In 1913 Dr. Lewarne reported that he could not persuade her to have the washing done, and that her present condition was no worse, and he had heard no further complaints. The patient herself reported, in 1915, that her throat was "certainly much better," and she swallowed with greater ease and comfort, though there was still some expectoration at night. In 1917 she wrote that her throat was much better, she could feed very well, though occasionally, with anything irritating, she had a "little choke." Her weight and general health kept up to the normal. Dr. Lewarne also wrote: "She has been wonderfully well without any treatment." On July 9th this year Dr. Lewarne wrote: "She is now 78 years of age, and going strong, and is quite active and able to get about. She still makes extraordinary noises during and after meals, but being very deaf these do not worry her."

CASE II.

The second patient, a lady aged 78, was first seen in June, 1916, recommended by Dr. Soltau Fenwick. She complained that while lunching in May, 1915, she suddenly had a choking feeling and swelling in the throat, followed by regurgitation of a small quantity of food. This occurred on two or three occasions during the year. Food had occasionally stuck "against a ledge" at the level of the sternal notch, and then had been regurgitated. There had been no trouble with liquid foods. She had suffered from

spite of reduction of the anterior ends of the middle turbinated bodies at the time of the removal of the septum, very considerable hypertrophy of these structures has ensued. The patient, as the result of the above, then seeks relief for tightness across the upper part of the nose and nasal obstruction.

The operation is extremely difficult where it is most needed. In the worst rumpled septa, however experienced and skilful the operator, sloughing and perforation often result, leaving the last state of that septum worse than the first. The cases in which it is least needed yield the best results; those in which it is most required are at times wisely left alone. Further, general anaesthesia for operations upon the upper air passages, particularly when prolonged, is attended with greater risk. Lastly, it is questionable whether the end-results of rectifying the nasal septum by removing it by submucous resection are any better than those formerly obtained by other operations.

To avoid unnecessary discussion let me say I am in favour of a limited submucous resection in removal of spurs and ridges, and of the septum when badly rumpled. The procedure I follow when orthopaedic surgery on the septum is inevitable may be described as a modification of Moure's operation.

Owing to their complete obsession by the submucous resection and removal of the septum there must be among the rising generation of rhinologists many who have not seen Moure's operation performed, and have not even seen the instruments. In spite of the arguments about the resiliency of cartilage, I may claim to have got good results, and certainly never the unfortunate troubles that have followed submucous resection and removal of the septum. Bear in mind that Nature has decreed that the nasal septum of civilized man is not to be in the plumb; that would be, as I have shown, abnormal and peculiar to the savage types. Therefore, why should we try to improve upon Nature by depriving a person of a rigid septum—necessary for respiration?

The results of the submucous resection and removal of the septum taken on the whole are not satisfactory; for reasons I have given it is not sound surgery. The paper has been written to review the position and to promote discussion. The time for half-truths has gone by; I cannot expect those who have spent years in acquiring skill in the submucous resection operation to agree with me, and I shall be sadly disappointed if this paper is not criticized.

DISCUSSION.

Dr. W. S. SYME (Glasgow) said that partial nasal obstruction was not detrimental to hearing in a marked degree. The aim of the operation should be functional rather than anatomical. He emphasized the importance of removing deformities of the lower part.

Mr. HERBERT TILLEY (London) said that no inconsiderable amount of the disrepute that had fallen on the operation was due to its imperfect performance. He instanced four of the common causes of failure: (1) Leaving untouched a prominent premaxillary crest in the posteromedian region of the vestibule, against which the ala nasi was drawn during inspiration. (2) Neglect to remove a prominent teat-like prominence at the junction of the vomer, central plate of the ethmoid, and the cartilage of the septum. (3) Failure to resect a posterior deviation of the central plate of the ethmoid and vomer. (4) The overlooking of a deviation of the bony "nasal crest" of the superior maxilla. If the cartilage alone was removed, the septum would still be held across to the crest when healing was complete. Mr. Tilley held that in long-established deafness due to what was termed "chronic otitis media," resection of a deviated septum produced no improvement in the hearing. If, however, inflation of the tympana brought about a temporary but definite increase in hearing, then any form of nasal obstruction should receive appropriate treatment, and good results might be anticipated by removing catarrhal conditions of the middle-ear cleft. No condemnation could be too severe of those who performed submucous resections in cases of genuine oto-sclerosis. Such operations must be due either to ignorance of the pathology of that condition or to other considerations which it would be scarcely worth while to discuss. To abuse the confidence of patients by telling them that the proposed nasal operation might not cure the deafness but it would probably prevent it from getting worse, at least suggested the question, "How can you prove that?" Such operations not only added to the "sorrows of the septum," but also to those who were jealous of the fair fame of this special department of medicine.

Mr. NORMAN BARNETT (Bath) found that rigidity of the septum rapidly returned after submucous resection, and that failure in procuring a good result was often due to overlooking enlarged posterior ends of the inferior turbinals.

Mr. ERNEST B. WAGGETT (London) said that the septum operation was not performed often enough, nor well enough. He added that leaving a spur from the vomer was a common cause of failure.

Mr. E. D. D. DAVIS (London) spoke glowingly of his personal experience of undergoing submucous resection; his previous troubles of nasal obstruction and prolonged "colds" had quite disappeared. He mentioned that one reason of unsuccessful result was that the septum was not always responsible for the obstruction. He urged submucous resection before operations on the sinus, and particularly on the ethmoid, if the septum was deflected, both to provide access at the time of operation and to facilitate drainage afterwards.

Dr. IRWIN MOORE (London) said that, in his opinion, the secret of success in the operation of submucous resection of the septum was the removal of as little of the cartilage as possible. The majority of deviated septa were developmental in origin, the obstruction being caused by the lower margin of the cartilaginous septum slipping off the superior maxillary ridge, followed by ossification in this situation. In these cases he separated the cartilage with scissors from the maxillary ridge, after which he removed the bony mass obstructing the inferior meatus. The "spring" (deviation) of the cartilage not removed could be counteracted by incising the cartilage (from above downwards) at distances of a quarter of an inch (from before backwards), which allowed the attached segments to adjust themselves in the vertical position. If this method was pursued no "flapping" of the septum would follow the operation. He had operated upon a very large number of patients and seen a great deal of the work done by other operators, and he was satisfied that the operation of submucous resection of the septum, as carried out in the majority of cases, was a credit to the specialty in this country.

Dr. DOUGLAS GUTHRIE (Edinburgh) advocated the use of local anaesthesia in this operation. Dr. W. HILL (London) said that the exigencies of hospital practice necessitated the extensive resort to local anaesthesia in septal and other nasal operations. In private practice, however, he relied mostly on a general anaesthetic, as a certain number of patients complained afterwards of the want of absolute efficiency of local anaesthesia. In his own person he would prefer a general anaesthetic if he had to have a septal operation. Local anaesthesia was much more frequently and extensively used on the Continent and in America than here, not merely for septal operations and tonsillar excisions, but for such major procedures as radical antral and mastoid operations and excisions of the larynx. Dr. SCOTT STEVENSON (London) advised deep general anaesthesia. Mr. H. BELL TAWSE (Nottingham) said that, with the exception of two cases in children under 14 years of age, he had for the past twenty years used local anaesthesia. Referring to "flapping" as an occasional sequel of submucous resection, he asked how it might be remedied. Mr. E. B. WAGGETT (London) replied that such a condition was readily cured by making a perforation in the posterior part of the septum sufficiently large to allow the air pressure to be equalized in both nostrils. Mr. DONALD WATSON (Bradford) favoured local anaesthesia; his personal experience under it was that he felt no discomfort, only a sensation of cracking of bone.

laryngocele; the neck had been traced through the thyro-hyoid membrane, and therefore it must be outside the larynx, and, of course, a pharyngocele, to which group Godlee rightly assigned it. Mention had been made of his omission to include the artificial enlargement of the pyriform fossa with the aid of leaden discs by natives of India and South Africa for depositing stolen coins and precious stones; he had been dealing exclusively with hernias and diverticular sinuses, not with mere artificial enlargements of natural cavities—with pouches, not with pouchings—and therefore had rightly excluded from illustration and consideration the interesting specimen in St. Bartholomew's museum.

THE SORROWS OF THE SEPTUM.

BY

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THE text of this article is taken from Pliny's *Historia Naturalis* (Bk. XI, Chap. 91): "Man is the only creature from which the blood flows at the nostrils; some persons bleed at one nostril only, some at both."

Pliny made that observation nearly nineteen centuries ago. It is so simple. It is so true. It is, as I shall show, the *fons et origo* of all the sorrows of the septum.

There is no haemorrhage of greater frequency, and no haemorrhage that is sooner forgotten. For the latter reason I found it difficult when I wrote the article "Epistaxis" more than a quarter of a century ago for the *Encyclopaedia Medica* to obtain very accurate statistics of its frequency. At that time I had the opportunity of putting questions to many hundreds of patients of both sexes, of all ages, and in all conditions of health. I found that one hundred and forty-two people in a thousand had recollection of the blood dropping from the nose. For the reason stated that must be accepted as a low estimate.

I further found that epistaxis was of more frequent occurrence in the male sex. Here let me anticipate by reminding you that deformities of the nasal septum are more frequent in males than in females. We now know—and this Pliny did not tell us—that the bleeding point in the vast majority of cases is to be found in the cartilaginous septum at a spot where there is a very free anastomosis of the terminal twigs of the vessels supplying the septum.

The human face, in comparison with that of the lower animals, is characterized by being extended vertically instead of horizontally. This characteristic determines the development of the septum, and the septum determines the development of the nose. The structures entering into the formation of the septum in man are subject to delayed or excessive development. The developmental activity continues, not only up to puberty, but, in a greater or less degree, some years afterwards. With that activity there must be an increase of newly formed blood vessels, resulting in a greater tendency to epistaxis and to deformities of the septum, as shown by the formation of ridges, spurs, and deviations. The development of the septum varies with the type of race; the higher the type the more prolonged is the developmental activity and the more common are the septal deformities.

It has been necessary for me to enter into nose-bleeding as peculiar to the human race as it is the cardinal point. It is difficult to remember any condition of the septum we are called upon to treat that is not vascular in origin.

In a paper strictly limited in words it is possible to mention only the more common of these conditions—such as haematoma, abscess, fibro-angeioma, septal thickening, outgrowths, ridges, spurs, crests, and, last but not least, deflections of the septum. In the group of fibro-angeiomata must be included not a few of those cases diagnosed and treated as sarcoma. Further, in this group must be included the "bleeding polypus of the septum." Remembering the papers which have been written, the discussions that have taken place, the time that has been spent by general practitioners in absorbing that literature on this and similar simple septal growths, how true becomes the difference drawn between the general practitioner and the specialist—the one always struggling to make less and less about more and more, the other always straining to make more and more about less and less.

Deflections and deformities of the septum are so common that the observation of Pliny might be amplified by stating that man—that is, civilized man—is the only creature in which the septum of the nose is not perpendicular. The higher we go in the human race the more correct this statement becomes. The collective result of independent investigations of a large number of human skulls has shown that deformities of the septum are present in 80 per cent. of European skulls. Those investigations were made on dried specimens in which the cartilage was generally absent. Clinical experience teaches us that some irregularity of the cartilaginous portion of the septum is the rule rather than the exception; so that in the higher types of races the abnormal becomes the normal. On the other hand, statistics based upon the examination of skulls of the lower types showed the reverse—the septum was free from deflections and irregularities in 80 per cent.

This "sorrow of the septum" has been handed down to us in art from the days of Pliny. Some scientists, after taking the most minute measurements of the nose of the Venus de Milo in the Louvre, came to the conclusion that the septum was not absolutely in the plumb. It is conceivable that had the missing arms, which have given rise to so much discussion among would-be restorers, been present, Venus, instead of holding up her drapery, would have had the left arm uplifted and holding a mirror, and the forefinger of the raised right hand adjusting the pros and cons of undergoing a submucous resection of the nasal septum.

In making a routine examination of the nose in all cases of affections of the ear, nose, or throat, it is truly remarkable how frequently we meet with ridges, spurs, and deformities of the septum, causing no inconvenience, no symptoms, and in no way material to the case, while their presence is not known to the patient. On the other hand, it is equally remarkable that, in the eyes of some rhinologists, the very presence of a spur or a deviation is a menace to the health of the patient, and that some orthopaedic surgery in the nose would cure almost any malady. Time will not permit me to enter into detail of the indications and contraindications for surgical intervention. Experience has shown that the nasal symptoms complained of are frequently in no way due to any irregularity of the septum that may be present, and that they can be completely removed by other means without removing or operating upon the nasal septum. Those other means must be left for another occasion.

This brings me to the much smaller group of cases in which orthopaedic surgery upon the septum is called for. First of all the choice of the operation. Here again time will not permit me to enter into the relative merits of the numerous operations that have been devised for the correction of septal deformities, and of the one for the removal of the offending septum. It is now some twenty years since the operation for the removal of the septum, bony as well as cartilaginous, by submucous resection was introduced. The number of instruments that have been devised for the operation, and the number of septa that have been dealt with by submucous resection, justify the statement that it would be difficult to mention an operation in minor surgery that has received so much attention, and (judging by the way it is referred to by the younger surgeons as *the* septum operation), we might add, to the exclusion and in ignorance of all other operations upon the deformed septum. It has become a fetish. There is increasing evidence that the general public has had enough of the removal of pieces of gristle from the nose. The end-results, however gratifying to the surgeon, are not always equally satisfactory to the patient.

The operation from the first appeared to me to be faulty surgery, inasmuch as it deprived the patient of a rigid septum and thereby impaired the nose as an organ of respiration. The nasal passages after the operation are left at times too patent, the septum too thin, and patients complain of symptoms due to the flapping of their membranous septum in the passage of air. Further, in

larynx. The larynx in the infant is relatively small and is situated at a higher level than in later life, so that dyspnoea is readily produced. Difficulty of swallowing is not so common as dyspnoea. It was noted in only 4 of 77 cases (McLean and von Hofe), and in 3 of the present series of 20 cases. The early stages are often marked by croupy cough and a "throaty cry, resembling the quack of a duck"; the latter is often described, though seldom heard. The head is held stiffly and often inclined towards the affected side. The temperature is seldom very high and may even be normal. The diagnosis, however, is merely a matter of conjecture until the throat is examined. In a good light the observer will note a swelling of the posterior pharyngeal wall to one side of the middle line, but as this is covered by normal mucous membrane it may be difficult by inspection alone to appreciate the altered contour. Digital examination is the most certain diagnostic test, but should not be practised unless one is prepared, if necessary, to open the abscess forthwith, as death during digital palpation has often occurred.

Diagnosis.—Considering the vagueness of the symptoms, and the fact that the abscess may escape notice even on inspection, it is easy to understand why the condition often passed undiagnosed. Nasal obstruction and discharge suggest adenoids, and, in my experience, this is the most frequent diagnostic error. As has already been mentioned, the symptoms may closely resemble laryngeal diphtheria, or a foreign body in the larynx may be suspected. Lymphosarcoma of the retropharyngeal region may, of course, simulate abscess, but is much rarer. Cervical scoliosis causes a unilateral projection of the posterior pharyngeal wall, and even in normal subjects, when the head is strongly turned towards one shoulder, a swelling, caused by the transverse process of the second cervical vertebra, may be seen behind the tonsil, as first pointed out by the present writer.[10] In such cases the swelling is, of course, of bony hardness.

Treatment.—If left to itself the abscess will cause death from suffocation, or it may rupture and flood the air passages. Should the patient survive this event, death from septic bronchopneumonia may follow, although it is noteworthy that two patients in the present series survived after spontaneous rupture of the sac. In one case the swelling subsided, apparently without rupture, while awaiting operation. While all observers are agreed that the abscess should be opened as soon as diagnosis is certain, there is some difference of opinion as to the method of procedure. It is generally agreed that the acute abscess should be opened from the mouth, external operation being reserved for the chronic variety of abscess consequent on bone tuberculosis. No anaesthetic should be used; this is a maxim of great importance, as a general anaesthetic increases the risk enormously, and, in any case, the pain is only momentary. The child should lie on his side, wrapped in a blanket with the arms fixed to the side. A gag is then inserted and the point of a long sinus forceps or peritonsillar forceps plunged into the most prominent part of the swelling and opened in a vertical direction. The operation must be performed rapidly, as the introduction of the gag may arrest respiration by pressing the abscess against the larynx. At the moment of opening the child is turned on his face with the head slightly dependent and the gag is removed. Pus flows from the mouth and nose and relief is immediate. Convalescence is surprisingly rapid in many cases.

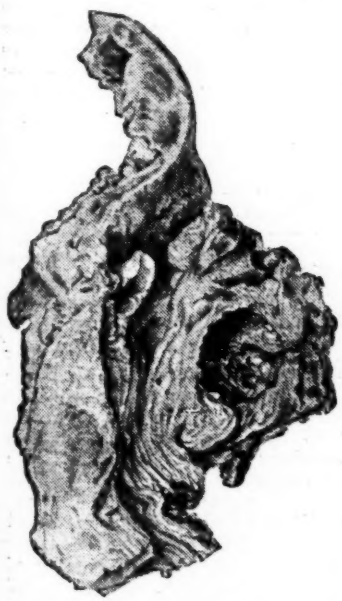

FIG. 1.—Acute retropharyngeal abscess in child aged 14 months, who died on the way to hospital.

Fatal Cases.—Fatalities during the operation will be largely avoided if the above method is adopted. Of three fatal cases in the present series, the first patient died on the way to hospital (see figure), the second immediately after admission, and the third, a feeble infant, died just after the abscess had been opened. Fatal haemorrhage has been recorded by Sokoloff[11]—a child aged 2—and also by Wylie and Wingrave[12] in a woman aged 21.

Conclusions.

1. Retropharyngeal abscess is not an uncommon disease, but is very liable to be overlooked.
2. For the anatomical reasons described, infants are the chief sufferers.
3. Dyspnoea is the principal, and often the only, symptom.
4. The abscess should be opened from the mouth, but no general anaesthetic should ever be used.

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DISCUSSION.

Mr. BELL TAWSE (Nottingham) referred to a child, aged 4, who developed a retropharyngeal abscess after tonsils and adenoids had been removed.

Mr. E. D. D. DAVIS (London) had seen retropharyngeal abscess develop some time after efficient enucleation of tonsils. One case was possibly tuberculous. He advocated the use of the Davis gag in opening such abscesses. The head was extended over a sand-bag so that it was lower than the larynx; the gag was then inserted and an excellent view obtained.

The PRESIDENT (Dr. Brown Kelly, Glasgow) asked Dr. Guthrie if it was a fact that the pharynx was attached posteriorly to the prevertebral fascia in the middle line. He did not think so, nor was it his experience to find the abscess on one side or the other of the middle line, but rather diffused behind the pharynx. This was important from the diagnostic standpoint: deep cervical abscesses pointing in the pharynx pushed the deep cervical fascia and the deep vessels towards the middle line and were confined to one side; retropharyngeal abscess pushed these vessels outwards. He emphasized the importance of opening retropharyngeal abscesses without an anaesthetic.

Dr. DOUGLAS GUTHRIE, in his reply, said he was quoting Waugh in suggesting that detonsillized patients were immune from retropharyngeal abscess. He would further investigate the anatomy of the part concerned in view of the President's criticism.

CLINICAL MEETING.

DURING the afternoon of July 21st and 22nd a number of extremely interesting and instructive cases were shown by Mr. A. R. TWEEDIE and Mr. BELL TAWSE.

Four cases of laryngo-fissure for epithelioma of the larynx were demonstrated. Periods of from ten years to six months had elapsed since operation without recurrence. Three of these had had one and a half vocal cords removed.

Regeneration of the front of the skull was exhibited in the case of a young man, the subject of acute frontal sinus suppuration in 1923. Osteomyelitis of the frontal and parietal bones developed before operation. The affected areas were incised and drained. The sinusitis was attacked by resecting the septum, clearing out the ethmoids, and performing Howarth's operation on both frontal sinuses, the intersinus septum not being present. *X*-ray photographs showed the progress of bony restoration.

Mr. A. R. TWEEDIE (Nottingham) mentioned that one of the reasons for lack of success in the operation was a pre-existing collapse of the alae nasi. He referred to the iniquity of operating on the septum in oto-sclerosis and giving the patient to understand that the hearing would benefit. In the case of catarrhal deafness not only did he require improvement in hearing after inflation before advising operation, but also a positive Gellé test and a mobile membrane, always assuming that bone conduction was at least normal. He used local anaesthesia as a general rule, even in children of 8 years. He recommended an operation for access in intranasal operations. After removing the deformity he replaced any cartilage he could.

Mr. KELSON (London) objected to packing the nose after operation.

The PRESIDENT (Dr. Brown Kelly) pointed out that nasal obstruction often varied from day to day, was frequently mainly due to turbinal turgescence, even though the septum was deflected. Submucous resection was performed not only to widen the narrow nostril but also to narrow the too-open side. He deplored mutilating the inferior turbinals, and did not favour operation in patients younger than 17 years of age.

Dr. JOBSON HORNE in reply, expressed his pleasure at the favourable way in which his paper had been received. One speaker had completely and concisely expressed one contention of the paper—that an operation upon an obstructing nasal septum should aim at a functional and not at an aesthetic result. Regarding the choice of local or general anaesthesia, his guiding principle had been that in hospital such work should be done as would be required in private practice; in the latter general anaesthesia would be preferred more often than not. He was glad that reference had been made to the enlargement of the posterior ends of the turbinated bodies as a factor in nasal obstruction. Had time permitted, that was one of the causes, other than irregularity of the septum, he had intended to touch upon. The importance of posterior rhinoscopy as a routine part of an examination of the nose could not be overstated, and the surprises encountered at times would fill a chapter.

ACUTE RETROPHARYNGEAL ABSCESS IN CHILDHOOD.

BY

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Two varieties of retropharyngeal abscess are distinguished in most textbooks. Bokai,[1] whose classical paper on the subject deals with 287 cases, showed that many were of lymphatic and not of spinal origin. Indeed, the spinal variety is relatively rare, coming to the notice of the surgeon on account of well marked signs of tuberculosis of the cervical vertebrae, and, as a rule, presenting little difficulty in diagnosis. The acute variety of abscess, on the other hand, is probably fairly common. Insidious in origin and often showing no characteristic sign or symptom, it frequently escapes diagnosis, or is only discovered at *post-mortem* examination. The condition perhaps more frequently escapes recognition than any other acute disease in childhood, and, if untreated, almost invariably ends in death. On the other hand, when a retropharyngeal abscess is recognized and opened the prognosis is good and the patient recovers rapidly.

Anatomical Data.—In order to understand the pathology of retropharyngeal abscess various anatomical facts must be kept in mind. The prevertebral fascia passes in front of the cervical vertebrae and prevertebral muscles, and separates the visceral compartment containing the trachea and oesophagus from the vertebral compartment containing the vertebrae and muscles. In front of the prevertebral fascia, and closely adherent to it in the middle line, is the mucous membrane of the posterior wall of the pharynx. Between the fascial and mucosal layers, in the potential space on either side of the mid-line, known as the space of Gillette, lies a group of lymphatic glands. Those are retropharyngeal glands, which are present in infancy, but gradually atrophy and disappear as the child grows older. They are in direct communication with that chain of glands which lies behind the internal carotid artery sometimes called the posterior carotid chain.

Pathology.—Infection of these posterior carotid glands may readily pass to the retropharyngeal glands and give rise to abscess formation; this is probably the usual sequence of events in acute retropharyngeal abscess. In two-thirds of the cases there is obvious enlargement of cervical glands; this enlargement may be of tuberculous nature. Although McLean and von Hofe[2] state that retropharyngeal lymphadenitis is rarely tuberculous, unless accompanied by vertebral caries, we have in two cases of retropharyngeal abscess found definite evidence of tuberculosis in the cervical glands, which were subsequently excised. The most frequent cause of abscess formation, however, is the streptococcus, and this organism may be isolated from the pus in the majority of cases. Waugh[3] regards the tonsil as the source of infection, as the condition is never found in children whose tonsils have been removed. Definite enlargement of the tonsils is present in about 80 per cent. of patients who suffer from retropharyngeal abscess. Trauma is a possible cause; thus Alexander[4] saw two cases following the attempted removal of adenoids, and Bokai includes a case caused by the impaction of a metal button in the nasopharynx. Another possible cause of retropharyngeal abscess is the direct spread of pus from the middle ear. Middle-ear suppuration was present in one-fifth of our cases, but there was also glandular enlargement in each, so that no case could be regarded as "otitic pharyngeal abscess," a rare condition which has been described by Dan McKenzie[5] and others. Even rarer is the acute non-tuberculous osteomyelitis of the cervical vertebrae observed by Kirmisson.[6]

Etiology.—The condition appears to be commoner in boys than in girls, and is said to be more prevalent in winter, although eight of the twenty patients noted in the accompanying table came to hospital during the months of May, June, and July.

Table to illustrate the Writer's Series of 20 Cases of Retropharyngeal Abscess.

(Boys 14; Girls 6.)

Age.	
0 to 1 year	7
1 to 2 years	4
2 to 3 ,,	3
3 to 4 ,,	2
4 to 5 ,,	1
5 to 6 ,,	1
6 to 7 ,,	2
Diagnosis.	
Dyspnoea	All
Dysphagia	3
Enlarged glands	13
Otitis	4
Nasal obstruction	6
Epistaxis	1
Temperature over 100° F.	8
Temperature under 100° F.	5
Result.	
Abscess opened (cure)	14
Spontaneous rupture	2
Swelling subsided	1
Death (sudden)	3

The organism was found in 8 cases (streptococcus in 6, pneumococcus in 2).

Age Incidence.—Most of the patients are under 1 year of age. McLean and von Hofe report 77 cases, of which 55 (71 per cent.) were under 1 year, while Frank[7] relates 74 cases, of which 4 were adults. The remaining 70 were all under 10 years, and 66 (90 per cent.) under 3 years of age, the youngest patient being an infant aged 3 weeks. Koplik[8] observed 77 patients under 10 years of age.

Symptoms.—The most characteristic symptom, almost invariably present, is difficulty of breathing. This may be attributed to bronchitis or laryngeal diphtheria, and may even lead to the fatal mistake of performing tracheotomy, as in one of the cases reported by Pearson.[9] If the abscess extends far up into the nasopharynx it will, of course, cause nasal obstruction, but, as a rule, the abscess tends to "point" just opposite the upper aperture of the

Reports of Societies.

THE EXANTHEMATA.

AT the Medical Society of London, on December 13th, a discussion took place on recent advances in the etiology, diagnosis, prophylaxis, and treatment of the exanthemata. Sir HUMPHRY ROLLESTON, President of the Society, was in the chair, and called upon his brother to open the debate.

Dr. J. D. ROLLESTON said that in no field of medicine had the collaboration of clinicians and laboratory workers been more fruitful than in the acute exanthemata, though the fruit had not always attained maturity. With regard to the etiology of scarlet fever three rival schools might be mentioned: the Italian school, who maintained that the pathogenic agent in scarlet fever was a diplococcus which was always present in the blood, cerebro-spinal fluid, and bone marrow during the eruptive period; the Dicks and others in the United States, who maintained that a variety of the streptococcus was the organism; and certain workers in Budapest and in Zürich, who deprecated the excessive importance attached to bacteriological research and maintained that scarlet fever was not due to a specific organism, but depended on a variety of different causes. The bacteriological diagnosis of this disease was not so simple a matter as that of diphtheria. His experience of the Dick reaction was that it was too frequently negative in the first few days of the eruption and too frequently positive in convalescence to be of great diagnostic value. Nor did he think the Schultz-Charlton test a very trustworthy guide. In discussing the prophylaxis of scarlet fever it must be borne in mind that the condition was not highly contagious; various preventive measures had received undue credit owing to failure to realize this fact. Numerous enthusiastic reports of the treatment of scarlet fever by a specific streptococcus antitoxin had been made, but he regarded as an instance of excessive zeal the claim of some writers that antitoxin should be administered as routine treatment. Unless a specially concentrated serum were used—and the cost of this was considerable—there was always a risk of the serum reaction being far more severe than the original attack of scarlet fever. Altogether, with regard to scarlet fever, his conclusions were that the *Streptococcus haemolyticus scarlatinae* described by the Dicks had more claim than any other organism to be regarded as the causal agent; that active immunization by injection of scarlatinal toxin was still in the experimental stage, but was full of promise, and that the use of concentrated scarlet fever antitoxin deserved trial from an early stage in all severe cases.

On the etiology of measles there was as little agreement among bacteriologists as on that of scarlet fever. The diplococcus described by Tunnicliff was more likely to be the causal organism of measles than any other hitherto described. The bacteriology of measles was not yet sufficiently simple or firmly established to be of service to the clinician. Prophylaxis by the injection of convalescent serum was of great value in affording temporary protection from an attack or in diminishing its severity if it occurred. Immunization, whether active or passive, against measles was specially indicated in the case of ill-nourished rachitic children, among whom the disease was particularly dangerous, but he did not think it necessary to urge its application in well-to-do families where measles usually ran a mild course.

With regard to other exanthemata, varicella was rarely a dangerous disease; he had seen only two fatal cases in twenty-six years' fever practice. The small-pox now prevalent in this country was of a remarkably mild character, but there was no justification for regarding this mild type as a distinct disease, and occasionally it gave rise to a rapidly fatal haemorrhagic form. No discussion on the subject would be complete without an allusion to herpes febrilis and herpes zoster. The viruses of the two conditions, though closely related, were sufficiently distinct to justify a separate etiology.

Dr. R. A. O'BRIEN said that the recent change of policy of public authorities with regard to scarlet fever would probably result in a larger number of cases being treated at home, so that the consultant and practitioner would have a livelier interest than heretofore in the final diagnosis and treatment and the protection of the household contacts. With regard to etiology, the full proof that the *Streptococcus scarlatinae* was the cause of scarlet fever would require that it should, when inoculated into non-immune subjects, produce the typical disease which should be infectious to contacts. The Dicks and Nicolle had apparently supplied part of the proof, for they each had produced with a culture of the streptococcus what they regarded as typical scarlet fever. Until this culturally produced scarlet fever was proved to be infectious to others, it was not possible to deprive of their last argument those who believed that some other agent caused the spread. He himself had been for long unconvinced, but what had finally broken down his scepticism was the fact that the serum of horses injected with the filtrate made from cultures of the streptococcus derived by a few hundred subcultures from the original patients, contained a specific antibody which in high dilution produced the Schultz-Charlton blanching, and when injected into contacts protected them against scarlet fever and had a definitely specific action on the symptoms of patients suffering from this complaint. With regard to the diagnosis of scarlet fever, the Dick test and the Schultz-Charlton test were of definite assistance in doubtful cases. A positive Schultz-Charlton reaction was practically absolute evidence that the disease was scarlet fever. Unfortunately, in connexion with the negative reaction, there were occasional discrepancies not yet fully understood, and a negative result, though it should suggest a careful reconsideration of the diagnosis, did not definitely exclude scarlet fever. Dr. O'Brien entered into a discussion of some possible explanations of the failures, one being that in a certain number of tests the right dilution might not be used. The optimum amount to use in the Schultz-Charlton test was still not known. With regard to the Dick test, a positive reaction here merely indicated that the patient was susceptible to scarlet fever, and it was therefore compatible with a diagnosis of scarlet fever, but unfortunately again a negative reaction to the strength of Dick toxin at present used did not definitely exclude scarlet fever. In time it might be possible to arrive at such a strength of Dick toxin that a negative response might be held to exclude. It had been difficult to get conclusive evidence of the value of antitoxin in the treatment of scarlet fever; the disease in most parts of the world was now very mild. But if serum were of complete efficacy in the treatment of all forms of early and late scarlet fever, toxic, and with septic complications, evidence would soon accumulate. In the treatment of septic complications it was doubtful whether any serum available to-day was of much use, except that the serum might help the patient over the "toxic" part of his attack and enable him to deal with the "septic" part of it himself. There was sufficient evidence from numbers of hospitals in which serum had been used that antitoxin was effective in the treatment of uncomplicated and toxic cases of scarlet fever, and those who had most used it would continue to do so. With regard to prevention, there was little doubt that Dick-positive reactors could be turned negative, and so protected against scarlet fever, either with from 2 to 5 c.cm. of antitoxin, which gave protection probably for two or three weeks, or by active immunization, which protected for a long period

With regard to measles, Dr. O'Brien remarked that on the assumption that the green diplococcus of Tunnicliff and others was the causal agent, several horses had been injected with an "anti-serum"; the matter was still in the experimental stage. He added a few words about erysipelas. The haemolytic streptococcus isolated from cases of erysipelas seemed to be serologically indistinguishable from that of scarlet fever, and in rabbits it had been possible to show a certain degree of specific neutralization of the culture which, when injected alone intradermally into these animals, produced a lesion very like human erysipelas.

Dr. FOORD CAIGER was in agreement with Dr. Rolleston's conclusions except as to the value of the Schultz-Charlton reaction as a test in scarlet fever rash. In 1924 he made

An example was given of non-recurrence of cancer of the tongue in which the growth, involving the right tonsil and pillars, had been excised seven years ago, and the palpable cervical glands had been treated by *x* rays.

A case of endothelioma of the right nostril and maxillary sinus was treated by 50 millicuries of radium salt in the antrum and 40 millicuries in needles of 2 millicuries each in the right ethmoid for twenty-four hours. There was remarkable stimulation of the growth by the radium, followed in three months by its complete disappearance. This case illustrated Hastings Gilford's view that radium destroys cancer cells by stimulating their growth beyond their viability—that is, by shortening their life cycle.

The views expressed on an example of rhinotalia apperta drew attention to the necessity of excluding such a condition before removing tonsils or adenoids.

An instance of left temporo-sphenoidal abscess causing contralateral paralysis of the right arm and leg, together with aphasia, aroused much interest. Meningitis complicated the issue, and during the illness the cerebro-spinal fluid was turbid, contained polymorphonuclears and organisms, and was deficient in chlorides. The abscess was opened, and recovery was uneventful. Such findings as the above in the cerebro-spinal fluid would appear to have stamped the meningitis as the malignant variety. (See report on combined discussion of the Sections of Medicine, Otology, Neurology, and Laryngology of the Royal Society of Medicine, *Proc. Roy. Soc. Med.*, vol. xviii, Part 3).

Opinions were invited in a case of extensive epithelioma of the hard palate as to whether diathermy was indicated. Mr. NORMAN PATTERSON considered the primary growth amenable to such treatment in spite of the bone involvement, and suggested *x* rays for the associated glands.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

MIGRAINE AND ACETONURIA.

THE negative result of a careful search throughout the extremely interesting discussion on migraine, reported in the JOURNAL of October 30th, and the editorial under "Sick headache" on a subsequent page, for any mention of the association of migraine and acetonuria prompts me to put forward a plea for the routine examination of the urine for acetone, in addition to ophthalmic and other investigations, in all cases of sick headache.

In the pursuit of a busy country practice on the northern slopes of the South Downs examination for acetonuria of all cases of headache and vomiting coming under observation has elicited the presence of acetone bodies in far too big a proportion of cases for the possibility of mere coincidence.

The following case, recently under observation, would appear to be of sufficient interest to be reported in detail.

A professional man, aged 42, physically fit, with no previous history of migraine, had a sudden attack while walking in his garden. Giddiness, headache, and a visual disturbance, described by the patient as partial blindness, came on so quickly that he experienced difficulty in staggering back into the house, where he collapsed on a bed without undressing. Vomiting supervened, and giddiness was so distressing that he was unable to sit up unaided. The possibility of hyperpiesis was considered, but the maximum systolic blood pressure proved to be 130 mm. The temperature was subnormal, and examination of the heart, lungs, and abdomen failed to elicit any abnormal physical sign.

Routine bedside examination of the urine for albumin, sugar, acetone, and diacetic acid, by means of capillary tubes containing appropriate reagents, revealed the presence of excess of acetone as the only abnormality.

While this examination was being made the patient complained that the least movement of his head produced nausea resembling sea-sickness, both the bed and walls of the room appearing to move as if in a seaway.

An alkaline mixture and later glucose were given by the mouth, but as both were vomited, an enema was administered containing two heaped-up teaspoonfuls each of sodium bicarbonate and glucose. Much to the surprise of the nurse who gave the enema a pint and a half was completely retained, the patient passing a semiformed motion some seven hours later. In the meantime improvement was very gratifying, the patient slept and dozed alternately, and was then able to get up without nausea or giddiness to go to stool. Glucose, alkalis, and then light food were given by the mouth; in twenty-four hours the urine was free from acetone, and the patient felt himself again.

Routine examination of the urine for acetone of all children attended since resuming civil practice after the war has revealed many cases of vomiting associated with acetonuria. These attacks appear to be due to excitement, indiscretions of diet, and intestinal stasis, and can actually be prevented or controlled by careful dieting and a course of alkalis. The attack itself is best relieved by administration of glucose. Some of these children, now well on in adolescence, suffer from sick headaches without vomiting. These attacks are also associated with acetonuria, appear to have the same etiology, and to be relieved by the same treatment as the periodic attacks of vomiting of early childhood.

Routine examination for acetonuria in these cases over a period of years has afforded me a most fascinating problem for speculation, study, and possible further research.

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ADRENALINE AND THE STOPPED HEART.

So much interest has recently been evoked as to the effect of adrenaline in reviving the heart in moribund cases that we are prompted to add our testimony as to its efficacy in the following case.

A Chinese farmer, aged 36, was admitted on September 20th complaining of distension of the abdomen and swelling of the legs, which had been going on for about a month. He lived a quiet and sober life and denied any venereal infection.

The abdomen was much enlarged and palpation elicited well marked fluid thrill. The distension was so great and with venous engorgement that the colour of the abdominal skin was purpuric. Before paracentesis abdominis could be performed at 5 p.m. on the same day, he suddenly became breathless and lost consciousness. He was found pulseless and no heart sounds could be heard on auscultation; 10 minims of a 1 in 1,000 adrenaline solution were injected into the heart and artificial respiration begun; after about five minutes the heart sounds became audible again, the pulse returned, and he regained consciousness. He died a second time at 12 midnight—that is, five hours after the adrenaline was given. We rather regretted we did not give him another injection and watch whether the heart would respond again to that stimulant. As the relatives refused a *post-mortem* examination the cause of the ascites still remains obscure.

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ACUTE SUFFOCATIVE PULMONARY OEDEMA.

THE following case may be added to those which have recently been published in the JOURNAL.

A married woman, aged 54 years, has been under my care for over five years on account of myocardial degeneration and arteriosclerosis. During the last five months she has had twelve attacks of acute suffocative pulmonary oedema. The attacks always come on at about 9 p.m., soon after she has retired to bed. They are very typical. She sits in bed looking desperately ill, and with a vessel in her lap, into which she coughs frothy, blood-stained fluid. She is grey and pallid, with a cold sweat on her face and chest. The pulse is regular, rapid, and feeble. Râles are heard all over the lungs.

Each time I have given a hypodermic injection of 1/4 grain of morphine and 1/100 grain of atropine sulphate. In about half an hour she is breathing easily, the cough has stopped, the pulse is slower and stronger, and in about two hours she is asleep. The next morning she feels practically none the worse for what she has gone through the night before.

My experience is the same as that of Dr. W. W. MacNaught (BRITISH MEDICAL JOURNAL, October 30th, p. 780) in that the onset is very sudden and without warning symptoms, that there is no loss of consciousness and no general oedema, and that morphine and atropine given hypodermically control the attacks.

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all cases where the clinical symptoms did not suggest internal ear disease there should be a detailed examination of the heart, the kidneys, and intestinal tract; records of blood pressure should be made.

Dr. LEWIS SMITH could not agree with Sir William Milligan's conclusions as to the frequent relation between abnormal blood pressure and ear disease. For the purposes of this discussion he had carefully analysed a series of cases examined by himself. In 50 cases of hyperpiesis in adults, with a systolic blood pressure of 200 mm. or more, he had found that only ten patients mentioned giddiness among their prominent symptoms. In 20 cases of pronounced low pressure in adults, with a systolic blood pressure of 110 mm. or lower, only four mentioned vertigo. In 50 cases complaining of vertigo as their main trouble, he found only 13 whose blood pressures were markedly above or below the normal, and in 40 cases of aural vertigo —Ménière's symptom complex—29 showed a normal blood pressure. He considered these figures conclusive evidence against a common causal relation between abnormal blood pressure and ear disease. He discussed the complex causation of vertigo and emphasized the frequency of a nervous factor, either exhaustion or anxiety, in its production. He also laid stress on toxic factors, notably tobacco and alcohol. Some of the cases were undoubtedly epileptic. He dealt in considerable detail with the clinical features of Ménière's symptom complex, in which he thought there was often evidence of organic disease of the internal ear, and discussed various forms of treatment. He pleaded for a more careful investigation of all cases of vertigo, which were often too loosely ascribed to high blood pressure or arterio-sclerosis. In his series of 40 cases, only seven had been correctly diagnosed; a considerable number of the sufferers were living in a quite unnecessary dread of cerebral trouble, and the fear of "strokes."

Dr. W. J. ADIE, after commenting on the limitations imposed by the title of the discussion, said he thought he could best promote discussion by adopting an extreme view. He would therefore attempt to defend the view that there was little or no direct relation between disorders of the blood pressure *per se* and disease of the ear. Tinnitus and vertigo were common in disorders of the central nervous system. If auditory impressions succeeded in reaching the medulla they were always perceived in spite of most extensive lesions of the brain stem and cerebrum; hence the presence of deafness indicated a lesion of the ear or eighth cranial nerve, but the localizing value of tinnitus or vertigo without deafness was not certain. The only cases that deserved serious consideration in this discussion were those with deafness and vertigo or tinnitus. The association of these symptoms with disorders of the blood pressure was common, but there was nothing to prove that it was more than an association. There were two possibilities: the degenerative changes might occur in the ear side by side with degenerative processes in other parts, such as the arteries or kidneys, or the degenerative changes might be the results of a defective blood supply to the ear. Whatever their origin it was certain that the same processes and exactly the same symptoms might and did occur in persons with high, low, and normal pressures. They were too apt to correlate the blood pressure with certain symptoms. If a patient with high blood pressure had a stroke, it was thought to be due to haemorrhage, whereas if the pressure was low thrombosis was diagnosed; but thrombosis was extremely common in the diseased arteries of persons with a high blood pressure. Sir William Milligan was right when he said that the symptoms they were discussing called for a complete overhaul of the patient; the fact that the pressure was often low or normal did not justify the conclusion that there was little connexion between these symptoms and certain general disorders. Dr. Adie felt sure that the greater number of older patients with these symptoms had also arterial disease. His point was that the blood pressure was of little importance, the state of the vessels all-important. Hypotension in debilitating diseases sometimes caused symptoms that were certainly aural in origin, but these cases were rare. Attacks of dizziness or giddiness were frequent in patients with an unstable vasomotor mechanism or other circulatory disturbance, and in various functional and organic diseases of the nervous and other systems, but it was probable that the vertigo in most of these cases was of central origin. In many cases the site of origin of the symptoms was uncertain; even when they were certainly of aural origin the blood pressure varied. Hence they might conclude that though symptoms referable to the ear were commonly associated with general circulatory disturbances, the relation between disorders of the blood pressure *per se* and actual diseases of the ear was at most indirect and relatively unimportant.

Mr. G. J. JENKINS said that such auditory and vestibular symptoms and signs were only part of the general manifestation of blood pressure insufficiency. Patients might continue in apparent health with blood pressures considerably above or below normal, and without any auditory symptoms. It seemed that our views as to the relation of blood pressure to these symptoms must remain, to a large extent, speculative until we found a measure of efficiency of the blood pressure in a particular individual. He doubted whether very high systolic pressure had ever produced ear symptoms without there being some local change. With high pressure compensating for the existence of diseased vessels there was often evidence of labyrinthine disease; this local affection was probably part of the general disease, and not due to the blood pressure. Bone conduction was much diminished, and there was loss of high tones, the low tone limit being about normal. The conversational voice might be well heard, though whispers were almost inaudible. Vestibular tests often gave normal results. Most of these patients carried on well except for diminished hearing, but some had persistent tinnitus and dizziness, and in others it was difficult to decide whether their symptoms were due to inefficient blood pressure or to labyrinthine disease. When such affection of the labyrinth was more marked in one ear, it was possible that this organ might be affected by abnormally low pressure earlier than the other. The tinnitus and deafness might be limited to that ear, with nystagmus to the opposite side, and other localizing signs. This group of unilateral cases supported the suggestion that the fall in blood pressure caused the ear symptoms by affecting the labyrinth. Mr. Jenkins had found no evidence of pathological changes being caused in the ear by too high or too low pressures.

THE HOSPITAL AND PUBLIC HEALTH.

AT a meeting of the Section of Epidemiology and State Medicine of the Royal Society of Medicine on November 26th, Dr. S. MONCKTON COPEMAN, the President, occupying the chair, Dr. GEORGE F. BUCHAN read a paper on "The hospital in relation to the public health."

Dr. Buchan estimated that, for a community of 100,000 inhabitants, of average age and sex constitution, 250 hospital beds would be required for public health services, 177 for the notifiable infectious diseases, 28 for maternity and child welfare, 13 for school medical work, 3 for venereal diseases, and 29 for further hospital treatment of certain cases of measles, whooping-cough, orthopaedic cases, rheumatic fever and heart diseases, and cancer. Three-fifths of this accommodation was already provided in isolation and tuberculosis hospitals and sanatoriums. The remaining two-fifths would be similar to that already provided by the voluntary general and special hospitals throughout the country. Discussing the methods of provision of these additional beds, Dr. Buchan hoped that the question would not be further complicated, as had been suggested, by the transfer of rate-supported beds from boards of guardians to other authorities which were not always the authorities at present responsible for the consideration of public health problems involving extension of hospital accommodation. The suggested transfer would not unify, but would still leave hospital accommodation under different authorities. Since there were already provided in this country 179,772 beds by local authorities, and 50,460 beds by voluntary hospitals, he was of opinion that the need for erection of new hospitals by local authorities would seldom arise. For practical purposes, therefore, the discussion was limited to questions of extension

a series of tests and found that out of 100 consecutive cases of undoubted scarlet fever the serum, which was supplied by Dr. O'Brien from horses he had immunized with the haemolytic streptococcus, showed positive results in about 90 per cent. The success of that test did not depend, as one might have expected, on the concentration of the serum, but the results were equally or more successful in the higher dilutions. With regard to the Dick test, his experience at the South-Western Hospital was quite on the lines that Dr. Rolleston had indicated; the majority of cases coming into the hospital reacted positively, and then they were rather disappointed in a number which failed to show immunity at the time expected, though ultimately a large proportion did become immune. Reports of observations made in America led them to expect that the test would show a negative reaction at an earlier date than it actually did. It had been a satisfaction to him that the Metropolitan Asylums Board should have altered its policy in dealing with measles. Having regard to the fact that scarlet fever admissions were very much larger than those of measles, it seemed a pity that a disease like scarlet fever, which had about 1 per cent. mortality, should take up beds which might be more usefully allocated to a disease like measles, with about 10 per cent. mortality. A larger number of measles cases would now be admitted at the expense of scarlet fever cases. The connexion between varicella and herpes was interesting, and he was sorry that Dr. Rolleston could not throw more light on the subject than to suggest that the concurrence of eruptions was a pure coincidence.

Dr. F. PARKES WEBER asked whether any case had been known in which tuberculosis followed an attack of measles when that attack had not been accompanied or followed by a bad bronchopneumonia or pneumonia. A bad attack of bronchopneumonia did predispose to tuberculosis or aggravated a quiescent condition. As to the connexion between varicella and herpes zoster, an attack of herpes zoster was followed not rarely by an outbreak of disseminated vesicles on the skin. Little attention was usually paid to these, the patient was not frightened about them, and it was only by accident if the doctor's attention was drawn to them at all. It was not possible yet to be sure that this should be considered as an attack of varicella. He had heard of and seen a few striking cases in which the connexion seemed to be almost certain, but, of course, it was difficult to exclude chance.

In further discussion, Dr. LENNOX WAINWRIGHT asked what result would be obtained if the Dick test were applied to German measles, often confused with scarlet fever. Dr. GEORGE GRAHAM asked at what stage the streptococci, almost invariably present in scarlet fever, disappeared. Dr. C. E. LAKIN commented on the usefulness of the Schultz-Charlton test in deciding as between scarlet fever and enema and other rashes. Mr. ZACHARY COPE asked what recent work had been done on the relationship between tuberculosis and measles; he believed tuberculosis had been observed to follow measles much more commonly than to follow scarlet fever or other exanthemata. Sir J. DUNDAS-GRANT spoke of the ease with which scarlet fever patients could be isolated in the family, as compared with measles, where isolation at home was much more difficult. Sir HUMPHRY ROLLESTON asked whether there was any justification for thinking that the different varieties of scarlet fever might be due to different types of the haemolytic streptococcus, and whether, if the Schultz-Charlton reagent did not comprise all these types, this might explain its failure in some cases.

Dr. J. D. ROLLESTON, in replying to the discussion, said that recent work by German observers claimed to show that measles did not give rise to tuberculosis so often as had been thought. With regard to the treatment of erysipelas, he expressed himself disappointed with the anti-erysipelas serum, and also with antistreptococcic serum generally in the complications of scarlet fever.

Dr. R. A. O'BRIEN, also in reply, said that in distinguishing scarlet fever from German measles and enema rashes serological methods might help to some extent. If streptococci were found and the Dick and Schultz-Charlton tests were both positive, one should be careful before saying that the case was not scarlet fever. Unfortunately, the negative did not hold so definitely, except that if haemolytic streptococci were not present the chances were that the case was not scarlet fever. The fact that streptococci were almost invariably present in scarlet fever was not always borne in mind by clinicians when faced with these troublesome rashes. There were not enough observations to say dogmatically when streptococci disappeared—apparently during the second or third week. It was attractive to think that different serological types were responsible for different phases of scarlet fever. In the case of diphtheria, from time to time it had been conjectured that there were different types of the diphtheria bacillus, and that the antitoxin might protect against one strain and not against the others. That, however, was almost certainly fallacious, and he rather thought it would be so in scarlet fever, but he would like to see a concerted investigation in which in the unexpectedly Dick-negative and Schultz-Charlton-negative cases the organisms might be isolated and worked out in their agglutination groups.

ABNORMAL BLOOD PRESSURE AND EAR DISEASE.

A COMBINED meeting of the Sections of Otology, Medicine, and Neurology of the Royal Society of Medicine was held on December 3rd, when a discussion on the relation of abnormalities of the blood pressure to diseases of the ear was opened by Sir WILLIAM MILLIGAN.

Sir William Milligan stated that the vascular supply of the internal ear formed a terminal or closed circulation, anastomosis with the middle-ear vessels being negligible. The two main branches of the labyrinthine artery supplied the entire vestibule and the canals, the saccule receiving a separate supply from an independent branch. The blood left the internal ear by a vein in the internal meatus and draining the cochlea and vestibule, a vein running along the aqueductus cochleae and draining the cochlea, and a vein passing along the aqueductus vestibuli, draining the semicircular canals and the vestibule. This arrangement materially lessened the risk of back pressure; one segment might be put out of action by embolism or atheroma without affecting other parts of the ear. Any pathological abnormality was, therefore, most likely to affect the cochlea or the vestibulo-canalicular systems. The auditory nerve was the most sensitive of the cranial nerves, and responded to variations in arterial pressure very readily, as shown by sudden and transient attacks of vertigo and tinnitus; the latter might result from either high or low blood pressure and was usually bilateral unless due to a local organic lesion. Sudden vertigo and rushing tinnitus gave often the first danger signal of high blood pressure. The transient vertiginous attacks in high pressure were probably due to arterial spasm with resulting labyrinthine anaemia, and not to a definite exudate. Nicotine had a marked effect in raising blood pressure by inducing contraction of the arterioles, partly by stimulating the medullary vasomotor centre, and partly by local action. Repeated vertiginous attacks of the labyrinthine type, following sudden head movements and unaccompanied by deafness, were frequently forerunners of fatal angina pectoris. Persistent tinnitus in middle-aged, plethoric, and constipated women leading sedentary and luxurious lives was a signal of commencing high pressure. Sudden severe vertigo in petit mal, migraine, and severe nerve shock was probably due to angio-spasm, with resulting labyrinthine anaemia; such vertiginous attacks were also common in hypertension. When the symptoms were permanent secondary changes due to effusion or to toxic infection were probably present. In Bright's disease and certain cardiac conditions an exudation formed suddenly in the tympanic cavity, with deafness, tinnitus, and possibly vertigo; such hydrops tympani might be the first indication of contracted kidney in middle-aged men. Hypotension occurring in such conditions as severe anaemia, neurasthenia, and influenza might cause temporary loss of hearing, tinnitus, and vertigo from venous stasis in the internal ear. Primary disease of the internal ear was comparatively rare, and most cases of tinnitus and vertigo, with or without deafness, were due to vascular abnormalities associated with organic disease elsewhere in the body. In

diseases: the organism from which the vaccine was made should be the true causal organism of the disease; the vaccine should be autogenous; and the source of infection should be determined and removed if possible. These principles were exemplified by illustrative cases. The more closely the conditions were fulfilled the greater was the chance of a successful result. Dr. Edgecombe condemned "speculative" vaccines made from the bowel or other sources, on the assumption, without adequate proof, that therein lay the source of infection. Any good resulting from such vaccines must be due to the non-specific reaction, of the same order as the familiar protein shock reaction. His own experience of the vaccine treatment of chronic fibrositis, neuritis, and arthritis, of supposed infective origin, was that in those cases in which no definite source of infection was found "speculative" vaccines made from the bowel were of little use. In those cases where a definite focus of infection was found, but was not removed, the results were equally poor. In those cases in which a focus of infection was found and removed the results were good. A similar or greater number of cases of the same type, however, recovered equally well without the use of vaccines. Prophylactic immunization by vaccines in certain diseases, such as small-pox and typhoid, stood upon firm ground. Curative immunization was on a less secure footing, and much of the vaccine therapy of the present day was purely empirical.

Clinical Cases.

Mr. E. R. FLINT (Leeds) showed a case of cervical rib in a schoolmistress, aged 23, who had complained of pain during the previous eighteen months in the whole limb occurring towards the end of the day, with neuralgic pain shooting into the inner side of the right arm and hand and some wasting of the intrinsic muscles of the hand. The rib was attached to the thoracic rib in front, and the subclavian artery and inner part of the plexus lay in front of the lower part of the cervical rib. Great improvement had followed its removal one month ago. There was also a small cervical rib on the left side which did not produce symptoms.

Dr. WILLIAM MACADAM (Leeds) demonstrated a case of intermittent hydrarthrosis. A woman, aged 25, otherwise healthy, had suffered from periodic attacks of synovial effusion of the ankle- and knee-joints, lasting three or four days, and preceded by loss of appetite, dyspepsia, and polyuria. There were also attacks of angioneurotic oedema occurring at times apart from those of the joint swellings and affecting one side of the face, the hand, and the subcutaneous tissues of the lower limbs. During a year's arsenical treatment there had been one attack of a localized erythema of the lower limbs, but no recurrence of the synovial effusions.

Dr. J. STEWART (Leeds) showed a female patient from whom he had removed two stones from the common duct during an attack of haemorrhagic pancreatitis two years ago.

MULE-SPINNER'S CANCER.

AT a meeting of the Manchester Pathological Society held at the Manchester University on December 8th, with Dr. E. M. BROCKBANK, the President, in the chair, Dr. JAMES ROBERTSON (M.O.H. Darwen) read a paper on "Mule-spinner's cancer."

Dr. Robertson recalled that since 1920 the attention of those engaged in cotton-spinning had been directed towards scrotal cancer because of its increased incidence among mule-spinners. Anxiety among employers had also arisen since the judgement given in 1922 in a Lancashire county court that, upon the evidence laid before it, this disease arose out of and in course of the workman's employment. The evidence was to the effect that the mineral oil used to lubricate the spinning-mule was thrown off by the rotating spindles on to the circular steel rod known as the faller shaft and on to the spinner's overalls. The friction of the shaft on the scrotum as the man leant over it, together with the irritation of the oil, were stated to be the causes of the disease. The question first arrested Dr. Robertson's attention in 1923 in the course of official visits to cotton-mills. Observation led him to doubt the prevailing opinion as to the cause of mule-spinner's cancer. He began investigations which led him to express these doubts in his annual report for that year, and to advance a counter-opinion. The starting-point of his inquiry was the article by Southam and Wilson.[1] After describing the mechanism of the mule and its faller shaft, and the process of oiling, and his experiments to determine the duration and extent of oil spray from the spindles, Dr. Robertson adduced evidence showing that no mineral oil reached the workman's overall from the spindles or shaft, and that no friction or pressure from the shaft was exerted on the scrotum; from this he concluded that these could not be the cause of spinner's scrotal cancer. Further investigation convinced him, moreover, that none of the oil absorbed from the workshop floor by the overall reached the scrotum under ordinary working conditions, and that mineral oil could not therefore be a factor in the causation of this disease. While the dirty scrotum, the mineral oil, and the movements required of the workmen had not changed since 1880, this form of cancer had only lately become serious, and he looked about for some recent factor or factors acting upon the scrotum and on a definite part of it. Until 1905 cotton-spinners wore soft white overalls of fustian, free from chemicals. But about that time blue overalls of a hard cheap material began to be used and gradually displaced the others. These stiff blue overalls were worn next the skin and held up by cloth straps over the shoulders. In the movement of piecing together broken ends of thread the pull of the overall, with its rough seam at the fork, caused slight pressure and friction on the exact points of the scrotum where epithelioma was usually found. Dr. Robertson accordingly suggested that these rapid intermittent frictions, some 240 in an hour, acting upon an unprotected and dirty scrotum, and in the presence of an aniline dye, were the cause of the disease, the friction and pressure being aggravated by the use of an inelastic brace. In support of this view he had ascertained that wool-spinners, who scarcely ever suffered from this disease, wore their overalls over a soft undergarment, and that the French cotton-spinners of Lille (among whom such cases were unknown, although they worked under the same conditions) wore similar overalls, but kept them up with waist-belts. Thus neither in the wool-spinner nor in the Lille cotton-spinner was there any friction of the overall upon the bare scrotum when the workman leant over the shaft to piece his broken thread. Although the Lancashire cotton-spinner worked in his naked feet on the oily floor of the spinning-room, yet he never suffered from cancer of the foot, or even sores on the sole.

In short, Dr. Robertson's conclusion was that this disease was not due to conditions in the mill, but to the friction (*plus* the scrotal state) resulting from the shoulder pull upon an inelastic brace, causing the fork of the overall to rub against the skin. Out of 29 cases seen by him who had been operated upon, 28 wore blue overalls. His experimental work convinced him that the spinner should wear a white fustian overall supported by an elastic brace, or if he wore a hard overall should have next his skin a short undergarment of soft material, and should wear an elastic brace or a waist-belt. The worker must also keep his scrotum clean. Further, since these investigations had proved that all the oil found on overalls came from the floor, the spinning-room floor ought to be washed at least every two years.

In the discussion which followed, Dr. BROCKBANK remarked on the absence of scrotal cancer in the wool-spinning industry.

Mr. A. H. SOUTHAM said that the skin of the sole of the foot was very different from the scrotal skin, and was not so liable to cancer. He had seen two cases of epithelioma of the air passages (one of the tonsil and one in the larynx) combined with scrotal cancer. He suggested that scrotal friction might also be present in other occupations, such as coal-heavers. Yet these people were not liable to scrotal cancer.

[1] BRITISH MEDICAL JOURNAL, November 18th, 1922.

of isolation hospitals, Poor Law hospitals, and voluntary hospitals. Assuming that the Poor Law hospital would be transferred to the local health authority for the area, he did not think that the problem presented serious difficulty. Extension would obviously be undertaken at the largest hospital, whether isolation, Poor Law, or voluntary, in the area. Doubtless there were still those who considered that infectious and non-infectious cases should not be housed on the same site. Such a view appeared to be opposed, not only to the experience of other countries, but also to the general principle on which the pavilion type of hospital had been established. If such a tenet were accepted it followed that a scarlet fever pavilion should not be on the same site as a diphtheria pavilion, particularly when the increased susceptibility of a scarlet fever patient to diphtheria was borne in mind. It was also contrary to his own experience. In Willesden during the four years 1919 to 1922 there were treated at the Willesden Municipal Hospital, which was built on the pavilion system, 1,617 cases of maternity and diseases of women, 1,541 cases of school children, 1,018 cases of children under 5 years of age, and 260 cases of general diseases of adults, as well as 4,590 cases of infectious diseases, or 9,026 patients in all, without infection spreading from the one side of the hospital to the other. He concluded, therefore, that there was no medical reason why a hospital suitably planned on the pavilion system should not admit all the diseases for which a local authority might make provision. Some might argue in favour of special hospitals for special categories of disease, as opposed to the large general hospital with its necessary special departments. He was one of those who favoured the latter. Multiple hospitals meant multiple equipment and increased cost of administration, with, to some extent, loss of efficiency because of that lack of interchange of ideas and opinions, both generally and in respect of individual patients, between a medical staff engaged in different forms of medical work under a common roof. Another advantage of the single hospital was that a definite economy in the number of beds to be established could be effected. Diseases were not all prevalent at once, and wards set aside for one disease might therefore be utilized from time to time for other diseases when not required for their normal purpose. Local authorities were empowered by the Public Health Act, 1875, to build hospitals for the reception of the sick inhabitants of their district. By the Public Health Act, 1925, they were further empowered to make subscriptions or donations to voluntary hospitals serving their area. Which of these two courses would be followed would depend on the views of the authorities concerned on the relative merits of voluntary or municipal enterprise. As examples of municipal enterprise he cited the Danish State Hospital and the Municipal Hospital at Copenhagen, and stated that, judging from his own observations during the present year, these were as efficient in respect of equipment and staff as the best examples of the voluntary hospital system in this country.

The public health hospital could be best staffed on the same principles as a large voluntary hospital, with specialists in charge of the departments and a sufficient number of resident medical officers for clinical purposes, the general administrative control of the hospital being vested in a medical superintendent. Medical officers entering the hospital service of an authority could make it a career either for hospital administration or for specialism in one or other of the departments, or utilize the appointment as a preliminary experience for general practice. In Copenhagen the heads of the principal departments, including the hospital for infectious diseases, were appointed university professors; Dr. Buchan commended this idea to our own local and university authorities. Dealing with the question of research, the speaker emphasized the need for inquiry into the antecedents of patients and for more intensive investigation of the factors influencing the production of disease. Research also likely to bear fruit was illustrated by the work recently undertaken in Leeds in relation to the post-operative longevity of patients with cancer of the breast. Concurrent investigation into the post-hospital conditions of the patient would also throw valuable light on the extent to which these hindered recovery, determined relapse, or accelerated the known sequels of the disease.

Dr. J. D. ROLLESTON referred to the practice in Paris of having pavilions for infectious diseases as part of the general children's hospitals, and said that the same principle was followed to a great extent on the Continent. He considered this an advantageous arrangement as it gave the best men an opportunity of devoting their attention to infectious diseases, which had given such excellent results as those of the immunization work done by the staffs of Continental children's hospitals, to which Dr. Monckton Copeman had alluded in his presidential address.

Dr. JANET LANE-CLAYPON referred to Dr. Buchan's estimate of the additional hospital provision required, and asked whether experience actually showed that there was a shortage of beds. Dealing particularly with cancer, she stated that it appeared that there was no delay in admitting patients for treatment in London. If by propaganda patients could be taught to apply while still operable, the need for cancer beds might be increased, but before providing extra beds throughout the country it would be well to know how far in fact there was a need for them.

Dr. ARNOLD referred to the large fluctuations in the number of beds required for infectious diseases, and suggested that if one hospital were used for all varieties of diseases economy in beds could be obtained by using the spare beds for cases which were not urgent and could wait without disadvantage. He thought that the fact that infectious diseases were treated in special hospitals in this country was a result rather of the special circumstances in which official public health measures were initiated than of any definite idea among sanitarians that it was necessary to have separate hospitals.

Dr. CLARK TROTTER supported the idea of a general hospital for infectious and other diseases. With regard to the provision of cancer beds he did not see why advanced cases of cancer should not receive treatment in the same way as advanced cases of tuberculosis. He disapproved of these being left to be dealt with under the Poor Law. He thought Dr. Buchan's paper was of special value in showing that a hospital to which cases could be referred when necessary by the public health department was of definite value to the community; the nature of the disease was of no importance from the public health point of view, as the object aimed at was the end-result—facilities for proper recovery.

The PRESIDENT agreed that it was desirable to get rid of the taint of pauperism associated with Poor Law infirmaries. He could not accept the suggestion that the majority of patients with inoperable cancer found their way into Poor Law institutions. Those that did so, as a rule, were admitted only a short time before death. It was obviously undesirable from the public health point of view that cancer cases, especially when in the stage of suppuration, should be treated in dwellings with a minimum of accommodation. If, under such a scheme as Dr. Buchan had outlined, the difficulties and possible dangers incidental to the care of patients under such conditions could be eliminated a notable advance in hygiene would be attained.

VACCINE THERAPY IN GENERAL PRACTICE.

AT a meeting of the Leeds and West Riding Medico-Chirurgical Society on November 19th, with Dr. CRAWFORD WATSON in the chair, Dr. W. EDGECOMBE (Harrogate) read a paper on vaccine therapy in general practice.

After referring to the prophylactic and curative sides of immunization, he discussed the specific and non-specific reactions excited by vaccines, and said that while prophylactic immunization depended mainly on the specific reaction, curative immunization by vaccine therapy appeared to be chiefly associated with the non-specific factor. Inasmuch as general, focal, and local reactions might be produced by the injection of a non-specific vaccine, it was not legitimate to assume that a vaccine causing such reactions was necessarily related etiologically to the disease. Three conditions must be fulfilled before vaccine therapy was undertaken in chronic infective

He then mentioned the different varieties of jaundice and the diagnostic significance of the van den Bergh test in obstructive and acholuric jaundice. In dealing with obstructive jaundice he stated that, while deep jaundice of short duration was not a severe surgical handicap, in long-standing cases it made the patient a very bad surgical risk, owing to liability to haemorrhage and other complications, such as an increase in bile secretion with a decrease in its quality. He mentioned the various measures to overcome these risks, such as blood transfusion and the intravenous injection of calcium chloride, and entered a strong plea for a two-stage operation with a minimal interference in very bad cases. He pointed out that in chronic jaundice, for all practical purposes, the diagnosis lay between that of common duct obstruction due to stone and that due to cancer of the head of the pancreas. He stressed the importance of the slightest diminution, however temporary, of the jaundice as deciding in favour of stone obstruction, and discussed Courvoisier's law and the importance of a distended gall bladder in the differential diagnosis of these conditions. He mentioned the usefulness of cholecystogastrostomy and various drainage operations in malignant and other forms of bile obstruction, and referred to the value of splenectomy in non-obstructive jaundice.

ENCEPHALITIC NYSTAGMUS.

A CLINICAL meeting of the Devon and Exeter Medico-Chirurgical Society was held at the Royal Devon and Exeter Hospital on November 18th, the President, Mr. R. WORTHINGTON, in the chair.

Dr. W. GORDON showed a case of encephalitis with nystagmus in a boy aged 9. There was a history of sudden onset with headache and pain in the back of the neck. On admission to hospital he looked dazed, but answered questions intelligently. The cerebro-spinal fluid reduced Fehling's solution markedly. The boy developed coarse nystagmus and paresis of the right arm. The symptoms were beginning to clear up. Dr. Gordon stated that inco-ordination of the eye was now associated with encephalitis lethargica. In his case the possibility of infantile paralysis had been suggested, but the symptoms cleared up rapidly, whereas in true infantile paralysis this was not usual. There was, as a rule, more destruction of cells in infantile paralysis, whereas the injury might be transient in encephalitis.

Dr. HORTON DATE said that Dr. Gordon's experience was somewhat opposed to his own; in school investigation during outbreaks it was by no means uncommon to find the ambulatory type of infantile paralysis. As a point in the differential diagnosis, the eye inco-ordination was certainly new to him. Dr. EAGER recounted his experience of patients who showed post-encephalitic sequelae with paraplegia, and evidence of permanent damage to the nerve cells. He recommended hyoscine in treatment.

Dr. GORDON, replying, said that he had dealt only with immediate effects, and not with sequelae; severe localizing symptoms of a stationary type at the onset were more likely to indicate infantile paralysis, whereas the transient and diverse symptoms occurred more frequently in encephalitis. He had not had any experience of hyoscine, but he had found belladonna useful. As regards treatment, injections of potassium permanganate by rectum had been given in this case. Another form of treatment advocated was that of Letters, who produced an aseptic abscess on some part of the body, such as the thigh, using turpentine as the local irritant, the idea being to create leucocytosis.

Tuberculous Pyonephrosis.

Mr. WAYLAND SMITH and Dr. ACHESON showed a married woman, aged 32, with tuberculous pyonephrosis. She was first examined in March, 1925, having had pain on micturition for ten months. There was a hard mass on the right side of the abdomen. She was cystoscoped and pus was found coming from the right ureter; tubercle bacilli were present. Nephrectomy was performed. The patient's weight in April, 1925, was 7 st. The after-treatment at her home, which was in one of the poorest quarters of Exeter, was conducted by Dr. Acheson. Her weight now was 8 st. 7 lb., and a catheter specimen taken last August showed a few pus cells, no organisms or tubercle bacilli, and no growth was obtained on culture.

Mr. A. L. CANDLER commented on the success of the operation in spite of the presence of advanced open tuberculosis; it had apparently resulted in complete recovery.

Mr. WAYLAND SMITH emphasized the value of the after-treatment; carried on in spite of the most unfavourable surroundings and structural obstacles, open-air treatment had been maintained throughout convalescence.

Dr. ACHESON gave a short account of the case and of the great difficulties he had encountered in providing the requisite treatment. Having, with considerable trouble, obtained an area of sun-exposed roof, and established the patient there for some weeks with great benefit, there was a subsequent and most disappointing eviction, and now he was doing as well as he could for the woman in one room shared with her husband and child.

Fracture of the Acetabulum.

Mr. WAYLAND SMITH showed a man, aged 63, with a fracture of the acetabulum caused by a fall from a scaffold in June, 1925, the patient landing on his left hip and buttock. Two months later he complained of pain in the knee and back of the thigh when he tried to move it. There was marked wasting of the left buttock and tenderness along the line of the sciatic nerve. *X* rays showed a fracture of the left acetabulum with a partial dislocation of the head of the femur into the pelvis. The fifth lumbar vertebra was also displaced and spondylitis deformans was present. The patient was treated by massage, radiant heat, and exercise. There was now flexion to the extent of 30 degrees at the hip, but the patient could bend the hip to a right angle, and walk with the aid of a stick. The interest of the case lay in the unusual type of fracture, and the subsequent return of function, although the diagnosis was only made two months after the fracture.

JAMES MACKENZIE INSTITUTE.

Acidosis in Children.

DR. H. CHARLES CAMERON (London), on November 16th, read a paper on "Some forms of acidosis in children," limiting his remarks to periodic or cyclical vomiting and allied conditions. He reviewed recent advances in knowledge of the biochemistry of the blood bearing on the subject, especially the factors involved in regulation of *p*H and in the formation of the ketone bodies. He showed that in the ketosis of cyclical vomiting the *p*H of the blood was unaltered though alkaline reserve was diminished and pulmonary ventilation increased. The acidosis was, therefore, in the majority of cases a compensated one, and the symptoms were due to the effort of the body in keeping the hydrogen ion concentration constant. Once this compensatory mechanism failed the condition became one of extreme danger, and the symptoms were referable to the alteration in *p*H. He emphasized the importance of intake of a correct carbohydrate-fat ratio showing that excess of fats resulted experimentally in ketosis, while carbohydrates had an antiketogenic action. Comparatively little biochemical research had been done in connexion with cyclical vomiting, but Wilson Levine and Rivkin had made observations which suggested that the subjects of this condition assimilated fats with greater readiness than the normal child. Turning from the biochemical aspects of the matter, the lecturer gave a vivid picture of the type of child in whom cyclical vomiting occurred—nervous, amyotonic, with unstable peripheral circulation, and showed that minor degrees of periodic illness, not reaching the level of severe vomiting, were characteristic of these children. He dealt fully with the management of such children, showing the value of diminishing the ketogenic elements in diet and of maintaining the alkaline reserve. He specially urged the importance of avoiding those environmental factors which experience had shown to be liable to precipitate attacks—for example, overexertion, excitement, febrile affections. Dr. Cameron concluded by emphasizing the importance of careful study of the early symptoms and constitutional peculiarities of the subjects of cyclic vomiting.

Dr. PROSSER WHITE had noticed keratosis of the skin and "irritative papules" of the forearm in mule-spinners who had been away from their work for as much as two years. He did not advocate the radical removal of the inguinal glands in cases of scrotal cancer, as he regarded this condition as a localized one, and he cited 33 cases in which removal of the inguinal glands had been followed by bad results.

Mr. J. MORLEY mentioned the case of a man who for thirty years performed only unskilled labour in the mill, but who had epitheliomata of the scrotum, face, and arm. There was no question of local friction in this case. He had seen tar workers with keratosic papules of the skin where they had been splashed. He asked if the scrotum and penis were soiled with oil by the hands during micturition. He strongly advocated the removal of the inguinal glands in cases of scrotal cancer, which, he said, always resulted in glandular metastases. He emphasized the difficulty of this operation and the bad results which might accrue, especially if the field of operation were soiled by lymph from cut vessels.

Dr. POWELL WHITE cited cases of scrotal cancer occurring years after the cessation of work. Dr. L. SAVATARD showed lantern slides of a case—a mule-spinner with a keratosic nodule of the scrotum and epitheliomata of the face and arm—and drew attention to the relationship between epithelioma and the conditions of xerodermia and ichthyosis of the skin. He suggested that the general atmospheric conditions prevailing in Lancashire had something to do with the incidence of skin cancer.

Dr. VEITCH CLARKE congratulated Dr. Robertson on his "field work." He mentioned the high incidence of cancer among chemical workers—where there was no local friction. He suggested that a specific reaction might take place between mineral oils and the sebaceous oil of the skin in bringing about the onset of cancer of the scrotum.

Dr. ROBERTSON, in reply, pointed out that a wool-spinner wore an undergarment, hence there was much greater protection. Coal-heavers wore soft trousers, and often no braces. All workers' hands were thoroughly cleaned after oiling the machines. If oil were on the scrotum, he thought that the incidence of cancer might be even greater. The late cases of scrotal cancer might be those that would occur in the ordinary way, apart from occupation. Chemical workers did not need to be as careful with their hands, hence contamination was easier. He strongly advocated the abolition of braces and their replacement by belts in mule-spinners.

SURGICAL DIATHERMY IN CANCER.

AT a meeting of the Manchester Medical Society on December 1st, Dr. F. CRAVEN MOORE in the chair, Mr. H. H. RAYNER read a paper on surgical diathermy in the treatment of cancer.

Mr. Rayner described the principle and technique of surgical diathermy, and dealt with its employment in the treatment of malignant disease of the skin and of the breast. Cases of buccal carcinoma were not included because the value of the method in these was now widely recognized. The advantage of diathermy in the treatment of cancer was threefold. It eliminated the possibility of implantation of living cancer cells in the operation wound; this reduced the liability to local recurrence after treatment. It sealed divided lymphatic channels in the open wound, which probably diminished the chances of the rapid development of distant metastases after operation. His experience in the removal by diathermy of massive breast cancer, as a palliative measure, led him to suggest that the ordinary cutting operation in these advanced cases was responsible, in some of them, for the rapid outbreak of metastases, and that such a sequel was less likely after diathermic removal. The third advantage was that the sterilization of the wound produced by the intense heat eliminated the chance of serious sepsis. This property made it possible to employ diathermy without fear of septic infection for the removal of foul ulcerating growths of the skin or breast, or growths about the anal margin, or in other positions prone to infection. The slough produced by the heat of the current provided a reliable protective barrier during the time that an ordinary open wound was most prone to infection—before the formation of a floor of granulative tissue. The cases quoted included fourteen cases of carcinoma of the skin—eight cases of rodent ulcer, two of lupus epithelioma, four of ordinary skin epithelioma, two involving the skin of the perineum and invading the anal canal. All these had been treated by diathermic excision within the past three years; there had been no instance of local recurrence in any of these. One of the patients with anal epithelioma died of internal metastases two years after operation without local recurrence or trouble. This man had, at the time of operation, an extensive and foul fungating growth invading one lateral wall of the anal canal—he had been sent into hospital for colostomy. Nearly all the rodent ulcer cases and the two lupus epithelioma cases were extensive and had been previously treated by x rays, radium, or operative excision, sometimes by all of these methods. Ten cases of massive and inoperable breast carcinoma had been submitted to diathermic removal of the breast as a palliative measure; no attempt was made to remove the axillary glands in these. Of these patients three died within eight to fifteen months of the operation, while seven were alive at periods ranging from one to two and a quarter years after the operation. Eight of these ten were considered to have received substantial benefit from the operation, most of them being able to lead ordinary lives for at least a year after operation. The type of case for which diathermic removal was advocated was that presenting a massive enlargement of the entire breast with ulceration, or impending ulceration of the skin, and unaccompanied by clear evidence of metastases except in the axillary glands. Lantern slides to illustrate the results of treatment in several of the skin carcinoma cases were shown, and some also to indicate the types of mammary cancer considered suitable for diathermic removal.

Habit Formation in Blood Vessels of the Skin.

Dr. P. B. MUMFORD, in a paper on this subject, said that the blood vessels of the skin, by constant usage of their power of contractility and dilatation, might acquire a habit of responding to lessened stimuli. Such stimuli might be external or internal in origin. They might be chemical, thermal, mechanical, or nervous in type, and the development of hypersensitivity to one form of stimulation was not necessarily specific for that form of stimulation only. The continual demand on capacity for rapid contraction or dilatation induced a markedly labile condition of the arterioles and capillaries affected. Dr. Mumford next showed that a distinction must be drawn between continuous and intermittent demand for dilatation, as the former often appeared to induce a paralytic change. Both "specific" and "non-specific" sensitization of the skin to external stimuli occurred. The vascular habit might be produced as a remedial measure in conditions such as pernio.

SURGICAL ASPECTS OF JAUNDICE.

AT a meeting of the Nottingham Medico-Chirurgical Society on November 10th, with the President, Dr. J. C. BUCKLEY, in the chair, Mr. A. H. BURGESS, surgeon to the Manchester Royal Infirmary, gave a lecture on the surgical aspects of jaundice.

Mr. Burgess, after defining jaundice, said that owing to the work of van den Bergh there was now recognized a "latent" jaundice in which the bile pigment in the blood was increased above the normal, but not sufficiently to overcome the kidney threshold and appear in the urine. He briefly described the van den Bergh test and the different results—immediate, delayed, and biphasic—explaining that the result depended upon whether the pigment had or had not passed through the liver. Mr. Burgess further discussed the work of Mann and Aschoff proving that the bile pigments were not formed in the liver, and the part played in their formation by the reticulo-cellular system, principally in the bone marrow and spleen, and only to a very small extent in the liver.

uncovered. In the second volume, following the same plan, there come under review the nutritive exchanges of carbohydrate, fat, protein, urea, uric acid, ketone bodies, and other intermediate metabolic products.

The argument upon which the diagnosis rests is carried over into the therapeutics. The problem is to re-establish a normal equilibrium either by removal of the cause of disturbance or, if this be impracticable, by such modification or artificial compensation of the environment as will tend to reimpose the normal balance. To this environmental therapeutics the author brings many inventions of man to assist. Control of diet naturally takes prominent place, and it is pleasant to record that so enthusiastic a dietetician makes the caution that since the intention of a régime is that it should be followed, it should therefore be followable and of such sort as to minimize the inconvenience and distaste inevitable in any disciplining of the appetites.

The form of presentation which has been described involves the appearance of some specific disorders in several chapters, so that the whole story of a particular disease cannot be found in one place. But what has been done has been done with intent, and the path of the desultory and of the purposeful reader is rendered easier by an ample index. Professor Achard deserves our thanks for a sincere attempt to bring closer the ways of the clinician and the ways of the physiologist. He merits thanks also for providing a book which, apart from its special argument, is a sound review of the state of knowledge in the field of normal and disordered metabolism. The price fixed by the publishers is not extravagant.

DISEASES OF THE EAR.

It is nearly twenty years since the late Mr. Hunter Tod published a book on *Diseases of the Ear*.[3] It was of moderate size and gave in plain language a simple and adequate account of the subject, and its excellence was proved by the large circulation it soon acquired, for it was reprinted three times. The untimely death of Mr. Tod, a source of profound sorrow to numerous friends and colleagues, prevented him from producing a second edition, and Dr. CATHCART has undertaken this task; he has retained the general style and appearance of the original edition, but, although he has endeavoured to make it as he believes Mr. Tod would have made it, the long interval has rendered necessary so many changes and additions that this effort has not, and could not from its very nature, have been entirely successful. It is a commonplace that it is more difficult to write a comparatively small book of this kind than an exhaustive treatise, because it is so difficult to know what should be left out. Dr. Cathcart, in trying to say what he believes Mr. Tod would have said, shows an inclination to touch on some fresh matters so lightly that the information is insufficient, though everything new has been introduced in a sympathetic and understanding spirit. Apart from this criticism of a feature which was perhaps unavoidable, there can be nothing but praise for the care and accuracy with which the new edition has been compiled, and it remains a safe and rational guide to the practitioner and student for all conditions commonly encountered. The illustrations are fairly numerous and suffice for their purpose, but a few are crude and in an artistic sense fall below the standard of the book, both in its text and general style. The new edition should retain the popularity of the former, whilst there will be many grateful to Dr. Cathcart for this graceful tribute to the memory of Hunter Tod.

Politzer's Text-book of Diseases of the Ear[4] has long been the sheet-anchor of every serious student of otology, and must be in the possession of every aural surgeon for reference. There is no other book which gives so broad and comprehensive a survey of otology, whilst at the same time every detail relating to anatomy, physiology, and pathology is studied with minute care. The sixth edition will therefore be welcome, but the responsibility for any changes now rests with Dr. BALLIN, who translated the last two editions at the request of the late Professor Politzer. These changes are not actually very numerous, but they are more important than a casual inspection might suggest, for the editor gives very few references to his sources of information, whilst the original references of Politzer are retained in almost precisely their previous form. A certain amount of obsolete matter has been omitted to make room for these alterations, and the editor might have been even more drastic, but it has to be remembered that the work is Politzer's, and that for many years it will remain the classical work on otology, based on sure and unchanging foundations. The editor therefore has exercised good judgement in restraining the temptation to alter the original, whilst at the same time he has actually omitted nothing of essential importance that has been produced during the last fifteen or sixteen years. This refers chiefly to the labyrinth, and there is a sufficient account of the various operations that have been proposed, most of which only differ in minute details, the objective for the most part being the same. The prognosis of meningitis is possibly not quite so gloomy now as it was in 1909, and in this part more recent observations might have been mentioned. The main consideration, however, is that this great work is still preserved almost intact, the attempt to give it a modern setting being in reality almost unnecessary. The general style of the volume is almost unaltered and the familiar illustrations, so many of which were from anatomical and pathological specimens in the author's collection, are retained, and are by no means the least instructive part of the book.

Dr. CATHCART introduces his book on *The Treatment of Chronic Deafness by the Electrophonoïde Method of Zünd-Burguet*[5] with a robust but unconvincing defence of empiricism. It is a commonplace that much medical treatment is empirical, but this is a misfortune and calls for apology rather than defence. The fact that the treatment recommended in this book is empirical in no way discredits it, but how much better the author and reader would feel if it had a sound scientific basis. After calling attention in this manner to a weak point in his thesis without any real necessity, the author then discusses the prevention of deafness, the best method of removing adenoids, and a variety of other matters on which he holds strong opinions. This all makes interesting reading, but it is not apposite, and the reader is half-way through the book before arriving at the "'osses." The second half of the book begins with an historical note on methods of auditory re-education. There follows a careful description of the apparatus of Zünd-Burguet and the manner of employing it. Finally there are records of a hundred cases of deafness, showing that sixty-eight improved. It is not possible to tell from any tests made beforehand whether the treatment will be successful, and it is necessary to give twelve sittings to ascertain this. The author says of this, "There is a factor in deafness as yet unrecognized, the presence of which—or it may be the absence of which—determines the result." In the cases treated the pathological lesions were very varied, and this suggests that the factor to which the author refers may be a functional one, for a functional defect is often added to the initial lesion in the hard of hearing. It must be obvious to anyone dealing with the deaf or partially deaf that the "malady of not marking" is only too frequent, and this may explain the possibility of re-educating some of them. The most remarkable claim is the relief from tinnitus, a condition of which such patients frequently complain more than of their deafness. It is quite clear that the method to which the author has devoted much time and study is worthy of serious attention.

[3] *Hunter Tod's Diseases of the Ear.* Revised and largely rewritten by George C. Cathcart, M.A., M.D. Second edition. Oxford Medical Publications. London: Milford, Oxford University Press. 1926. (Cr. 8vo, pp. xiv + 333; 67 figures, 4 plates. 10s. 6d. net.)

[4] *Politzer's Text-book of Diseases of the Ear.* Sixth edition, revised and largely rewritten by Milton J. Ballin, M.D., Ph.B. London: Baillière, Tindall and Cox. 1926. (Med. 8vo, pp. xii + 776; 302 figures. 31s. 6d. net.)

[5] *The Treatment of Chronic Deafness by the Electrophonoïde Method of Zünd-Burguet.* By George C. Cathcart, M.A., M.D. Oxford Medical Publications. London: Milford, Oxford University Press. 1926. (Cr. 8vo, pp. viii + 88; 1 figure. 4s. 6d. net.)

Reviews.

A TEXTBOOK OF SCHOOL HYGIENE.

By the publication of his book *The Fundamentals of School Health*[1] Dr. JAMES KERR, formerly school medical officer for London, has filled a gap in medical literature. Many excellent books on school hygiene, among them two by Dr. Kerr, have been written, and some of them have gone through several editions; they have stressed some one or other side of school work with which the author has been most familiar. The administrator in school medical affairs has rarely had an equal familiarity with the purely medical, or what is commonly called the "clinical," side, while those most engaged in the clinical work have been less cognizant of, or perhaps less interested in, the administrative side. So that it has come about that until now there has been no work on school hygiene in any way comparable to the admirable "systems of medicine" which we have had for generations down to Allbutt's and Osler's. But the deficiency has been made good. Dr. Kerr has had the good fortune to be both clinician and administrator. He was a clinician first, and throughout a long and distinguished career of administrative work of the greatest responsibility, both in Bradford and in London, he has never lost his enthusiasm for clinical work. He has remained a clinician. Accordingly, his book exhibits in a high degree the outlook of the accomplished administrator inspired by clinical insight.

It is no easy matter to give a fair impression of a volume of this order within the compass of a review. It contains nearly nine hundred well filled pages, and is obviously the result of patient recording and checking of accumulated facts during many years. Dr. Kerr has in fact been concerned with school medicine from the beginning. He was the pioneer of school medical work in Bradford, and again in London. The great organization that now exists in these two cities and in every part of the country came into being contemporaneously with his work. Few have any conception of its vastness, even if attention is confined to London. It is all based upon beginnings that were venturesome, or so thought at the time, though they have proved sound. Dr. Kerr's original ventures were planned with rare good sense, so that there has been little "reconstruction," but always further growth on the original lines of the conception. In writing this volume Dr. Kerr has gathered up his experience and followed it to the present-day development of an established system of health culture the like of which has never before been seen. Such an achievement is as rare as the privilege of seeing ambitions fructify in the fashion that he has seen his.

The book is a library. No side of school work is forgotten. Each section is dealt with, whether it be heredity, growth, physique, play, nutrition; or the more medical conditions of dental hygiene, nutritional diseases, and malnutrition as shown in crippling effects; or the educational side as exemplified in the conditions of elementary schools, of special schools, and the desiderata of sunlight, good artificial light, sanitation, facilities for washing, warming, and the choice of building sites. We have the whole gamut of clinical entities such as speech defects, eye, nose, and ear defects, and mental disabilities and their numerous correlations. All these are effectively dealt with and in well balanced style. The achievements of the growing company of workers in school medicine are liberally recognized. References abound to original literature. Withal the book is intensely practical. It is intended for the use of workers in the field, in the schools, for their assistance in their daily endeavour to secure better and still better conditions for the children.

Criticism of minutiae would be hypercriticism. But in a second edition—and we judge there will certainly be an early demand for one—we should welcome a fuller index of subjects, a separate index of authors, possibly also an extended bibliography, giving titles of papers referred to as well as of publications in which they appeared. Such additions would assist research workers. They would take some additional space, but some saving might be made by the omission of a few of the less necessary illustrations.

Every local education authority in the country might well provide its medical staff with a copy of this work; and it is likely that the technical staff, besides the medical staff, would be diligent readers of it.

[1] *The Fundamentals of School Health.* By James Kerr, M.A., M.D., D.P.H., Consulting Medical Officer, London County Council. London: George Allen and Unwin, Ltd. 1926. (Roy. 8vo, pp. xvi + 859; 163 figures. 35s. net.)

DISORDERS OF METABOLISM.

PROFESSOR ACHARD is so much in earnest about the special argument of his book *Troubles des Echanges Nutritifs*[2] that he has been at pains to introduce some hint of it into the title. In translating this as "Disorders of metabolism" we therefore do the author something less than justice, though, perhaps, we more adequately describe the scope of the book than would a literal translation. Professor Achard insists that the time has arrived in the evolution of medical thought when abnormal conditions should be described no longer by the symptom-complex in evidence, but rather in terms of the departure from complete physiological orderliness which is involved. With such an aspiration few will quarrel, but they will perceive that its logical pursuit in a comprehensive textbook demands a dogmatic physiology and a very definite conception of what a well ordered animal is.

The author defines the living organism as a system in equilibrium with its environment. Physical chemists will find occasion for pause, but the definition will serve, and for the present purpose it serves very well, for it gives to metabolism a special significance which Professor Achard uses to good purpose. The nutritive exchanges comprise the whole traffic with the outer world which is involved in the maintenance of this equilibrium, and find expression in physical or chemical balance sheets of intake and output. In the case of the organism with which medicine has particular concern the system is at once complicated and simplified by the presence of a stabilized environment in the form of a circulating fluid, and so the equilibria between blood and the exterior, on the one hand, and between blood and the tissues, on the other, must occupy the chief attention of students of metabolism. Whatever prejudicial alteration occurs in the external environment, whatever is responsible for defective absorption or impaired exchange, whatever leads to imperfect utilization of nutritive materials within the tissues or impedes the necessary disposal of waste products will be betrayed in the balance sheets as a disturbance of the nutritive exchanges—a disorder of metabolism. Among the defects of the environment there are considered natural and artificial changes in the gaseous atmosphere leading to disturbances in the respiratory exchange and the chain of readjustments, notably in the electrolyte balance of the blood, which these set in motion. Again, an unbalanced diet, lack of certain minerals, vitamins, or efficient proteins are defects in the same category which will have consequences uncovered in the nutritive exchanges. Disorders of the circulation, be their origin pulmonary, cardiac, or nephritic, errors of utilization, absorption, or excretion, whatever be the primary lesion, failure of co-ordination by nervous, vascular, or endocrine agencies, all invade the field of nutrition through the modifications which they impose on the equilibria of the blood. The author takes a catholic view of nutrition. He demands much of physiology, and sometimes we find him quoting confidently relations which are yet unproven and straining a little beyond the certitudes of knowledge, filling in detail where the eye has not yet been focused.

The book appears in two volumes for the suitable reason that it is too bulky to be constrained conveniently within one cover. The first and larger volume deals with gaseous, aqueous, and mineral exchanges, and each chapter involves a physiological introduction, a pathological discussion, and a consideration of the therapeutics in the disorders

[2] *Troubles des Echanges Nutritifs.* Par Ch. Achard. Paris: Masson et Cie. 1926. (Roy. 8vo: Vol. I, pp. vi + 695; 107 figures. Vol. II, pp. 525; 60 figures. 110 fr. the two volumes.)

British Medical Journal.

SATURDAY, DECEMBER 18TH, 1926.

EPSOM COLLEGE.

EDUCATION on right lines is an almost indispensable precedent of success in life; it is also an essential condition of the progress of any science which requires from those engaged in it an unselfish outlook, together with patient and honest work. The medical profession as a whole is, therefore, under a double obligation to support the only public school which has as a primary aim the provision of special facilities for the sons of medical practitioners to receive such training as will enable them to take up the study and practice of modern medicine. Epsom College, as we have often had occasion to mention, is leaving no stone unturned to ensure that the first stages of the long medical curriculum should be adequate in the instruction given, and in the inculcation of those ideals of scientific discrimination without which diagnosis is impossible and treatment becomes empirical. We referred on July 31st (p. 218) to the opening of the new chemical block, with its unsurpassed facilities for teaching this important preliminary in the medical course. The provision for instruction in biology has also received the fullest possible attention.

Something more is still required, however, since Epsom College should furnish a similarly high standard in all respects. We therefore invite special attention to the appeal of Dr. Raymond Crawfurd which is published at page 1195 of this issue. Dr. Crawfurd pleads for such assistance as will enable the sanatorium accommodation of the College to be brought up to date and made fully adequate. At present this is patently not the case. The wooden hut which is the only building available at the College at present for the isolation of all varieties of infectious disease is far from fulfilling the most elementary requirements for a school of its size. In the light of modern knowledge the sanatorium must also be considered unsuitable; it is not only inadequate, but also uneconomical to administer. The situation of the general school buildings is fine and the régime healthy, and so far no serious emergency has arisen; but the steady growth of the College, due to its increasing popularity, has created a problem which the council is compelled to face without further delay. As Dr. Crawfurd observes, the College, with its Royal Medical Foundation, ought to be a model for other schools in respect of its medical equipment, instead of being compelled to look enviously at many other institutions where better conditions obtain. The provision of a modern, but not luxurious, sanatorium, and of an adequate isolation block, is an urgent necessity, and the estimated outlay of £25,000 cannot be regarded as extravagant. Experience shows that for a school of this size the main sanatorium should afford accommodation for twenty boys, and the isolation block be ready to receive forty in the event of an epidemic. It is a reproach that the sons of medical practitioners during their education should be at a disadvantage in respect of their safety from infection and their treatment during illness as compared with boys who are being educated in schools less intimately associated with the medical profession. We can therefore support the appeal of Dr. Crawfurd with confidence that its justice will be widely recognized, as a matter of sympathy with individuals and of corporate pride in a great medical scholastic institution.

We have previously suggested that many would gladly contribute if they understood that even small donations were welcome. If every registered practitioner contributed 10s. this would supply the whole amount required; it is probable that very many would be glad to help if the claim of the College on their generosity were clearly presented to them. In the event of Branches and Divisions seeing their way to support the appeal shortly to be made by the British Medical Association Charities Fund, Epsom College, in common with other charities, will derive considerable benefit. Co-operation between the Association and Epsom College is becoming increasingly close, as is only right, and it may be mentioned that such difficult problems as the continuance of the education of a boy at the College when the death of his father—a medical practitioner—renders this impossible for financial reasons, are being sympathetically and practically considered. In our advertisement columns will be found information concerning the College, its foundation scholars and pensioners. Armed with such details medical practitioners may be able to bring the claims of the institution to the knowledge of those of the general public whose circumstances will permit them to make a return to the profession as a whole for services received from its members. Gratitude expressed in this way would be of lasting benefit to a school which has already achieved much and promises still greater results in the future.

BACKFIRE FRACTURES OF THE FOREARM.

EVER since internal combustion engines, which the driver had to start with his own hand, came into general use fractures of the forearm have been well known to occur from the engine backfiring while the chauffeur is in the act of turning the starting handle. The exact mechanism of these fractures and their varieties have been little investigated, and their treatment has been passed over by most authors, who have included them in general terms among fractures of the same region from other causes. It was time that more exact knowledge of their pathology and treatment was put on record, as Mr. Harold C. Edwards has done in the October number of the *Journal of Bone and Joint Surgery*,[1] the official publication of the American Orthopaedic Association and of the British Orthopaedic Association. Mr. Edwards deals with an experience of forty-two fractures which were treated in the fracture department of King's College Hospital.

All these fractures occurred in the lower third of the radius, but sometimes the styloid process of the ulna is broken off, or more rarely the shaft of the ulna may be fractured. From the histories given it is in some cases impossible to decide whether direct or indirect violence caused the fracture, for the shock of the explosion and the rapidity of the movement causing the injury may render the subject of it unable to follow the sequence

[1] *The Journal of Bone and Joint Surgery*, vol. viii, No. 4 (Old Series, vol. xxiv, No. 4), Boston, Mass, October, 1926, p. 702.

TECHNICAL EDUCATION FOR INDIANS.

Technical Education[6] is written for Indians, by the Principal of the School of Chemical Technology, Calcutta, as a guide to careers in the Indian public services and in commerce and industry. In a foreword Sir Willoughby Carey describes it as an excellent effort to clear up much confusion of thought which still exists as to the meaning of technical education in Bengal and its uses in assisting to reduce unemployment amongst the educated middle-class young men of the province.

Mr. GHOSH, the author of the book, goes further, and endeavours to show how technical education is a means of providing permanent and profitable employment, not only for the educated middle class, but also for the artisan class, the agriculturist, and the Anglo-Indian. In an opening chapter on the evolution of technical education in India he emphasizes the failure of previous attempts to introduce this form of education amongst the natives of India, chiefly because an erroneous distinction was made between technical and industrial education. Indian youths have been mistaken in persuading themselves to believe that the attainment of literary qualifications carried chances of employment, whereas their best chances are in becoming educated in agricultural and technical chemical sciences and in the crafts. From this point of view the author outlines a scheme of technical education which is suitable for the artisan or any other class, and which will give a prospect of earning a living by independent professional or technical work. By this he means that each caste or class should continue its traditional occupation, but should be trained to a higher degree of efficiency in it in the light of modern science. He remarks, for example, that the agricultural caste must remain agricultural in spite of a higher education. Much space is devoted to the subject of chemistry, especially in connexion with agriculture, medical research, and pharmacology, in all of which branches of knowledge technological education affords prospects of employment to the Indian student.

Mr. Ghosh takes long views and wide views of the subject, and he writes with the object of rousing his fellow countrymen from that lethargy which disinclines them to accept manual work and leads to a false sense of dignity in office and administrative work requiring literary qualifications. More than half of the book consists of twenty-six appendices of information regarding the regulations for admissions to, pay and appointments in, and latest particulars of, all-India and provincial public services, and of careers in commerce, trade, and industry. A book of this kind should prove of much value to Indians, and we heartily wish its author success in his attempt to deal with the problems of unrest and unemployment among his fellow countrymen, and to provide them with what he calls an introduction to health, wealth, and happiness.

NOTES ON BOOKS.

DR. J. F. HALLS DALLY'S manual on *High Blood Pressure: Its Variations and Control*,[7] which was reviewed in our columns three years ago (1923, ii, 1101), has now been revised and enlarged in the second edition, which costs rather more, and has been somewhat delayed by, among other causes, destruction of the type. The work has been kept thoroughly up to date—for example, Major's work on hepatic extract in reducing high blood pressure is recorded, but it does not appear that the author has employed it. An investigation of the blood pressure in the two arms in pulmonary tuberculosis does not support Dr. R. J. Cyriax's conclusions as to the significance of differences between the two sides. There are references to the late Sir Clifford Allbutt's posthumous book (1925), to the discussions at the Annual Meeting of the British Medical Association at Bath and at the Royal Society of Medicine on hyperpiesia, and Dr. R. Fortescue Fox has provided a section on the treatment by baths and waters. This edition preserves the useful character of the manual.

Even in the early days of training the mental nurse is liable to be faced with situations which demand prompt and efficient action. It is therefore desirable that she should be supplied at the outset of her career with a guide indicating the rules to be observed in dealing with patients and how to react to emergencies. Such information is supplied in Dr. RICHARD EAGER'S compact little volume on *Hints to Probationer Nurses in Mental Hospitals*,[8] the second edition of which has now been issued. It is a book which the probationer will do well to obtain, and, as the author advises, to read over frequently during the first few months of her training. The first part deals with rules, emergencies, fire, ward duties, homicidal patients, and "escapes"; the second provides a brief introduction to psychology which will help the nurse to understand the more detailed account of the mind given in the larger nursing manuals.

A recent review in these columns reported the reappearance of Dr. OTTO FÜRTH'S book on problems of physiological and pathological chemistry[9] in a new guise. From the travails of re-editing the "problems" had emerged, cast in a wider mould, as a textbook. Only the first part of the first volume was then in our hands, and we did not hesitate to commend it, finding that the spirit of the parent volume remained in the more comprehensive treatment which merited the change of title. This section dealt with the organic chemistry of the substances of living origin and with the chemical characterization of the blood. Of the second part it need only be said that it deals in a similar manner with the mechanism of the muscle process, with the chemistry of the brain, connective tissue, and bone, and with the secretory function of the liver, kidney, mammary gland, and thymus. All is adequate, up to date, judicial, and alive. The first volume will be completed by a section on the chemistry of the organs of internal secretion, and a promise is made that this will be followed by a second volume devoted to the chemistry of metabolism.

Dr. PIERRE LEREBOULLET'S little work on influenza,[10] which forms the latest addition to the series entitled "Les actualités médicales," is based on his experience of the disease during the pandemic of 1918-19 and of sporadic cases since. The book has five parts, devoted respectively to epidemiology and bacteriology, symptoms and complications, morbid anatomy, diagnosis, and prophylaxis and treatment. The bibliography consists of references to French literature almost exclusively, but the work of some British and American observers receives recognition in the text. The book may be recommended as being a lucid and practical exposition by a leading French physician.

[6] *Technical Education.* By J. C. Ghosh, B.Sc.Manch., F.C.S. Calcutta: Thacker, Spink and Co. 1926. (Cr. 8vo, pp. ix + 316. Rs. 4.8 or 8s. net.)

[7] *High Blood Pressure: Its Variations and Control.* A Manual for Practitioners. By J. F. Halls Dally, M.A., M.D., B.Chir.Cantab., M.R.C.P.Lond. Second edition. London: W. Heinemann (Medical Books), Ltd. 1926. (Demy 8vo, pp. xvi + 196; 30 figures. 12s. 6d. net.)

[8] *Hints to Probationer Nurses in Mental Hospitals.* By Richard Eager, O.B.E., M.D.Aberd., Major R.A.M.C., T. Second edition. London: H. K. Lewis and Co., Ltd. 1926. (Demy 16mo, pp. 88. 1s. 6d. net.)

[9] *Lehrbuch der Physiologischen und Pathologischen Chemie.* Zugleich II. Völlig neubearbeitete und erweiterte Auflage der "Probleme der Physiologischen und Pathologischen Chemie." I Band, Organchemie. II Lieferung: Muskel- und Nervensubstanz, Stütz- und Gerüstsubstanzen, Leber, Niere und Lymphatische Organe. Von Prof. Otto Fürth. Leipzig: F. C. W. Vogel. 1926. (Sup. roy. 8vo, pp. v + 209-416. M.15.)

[10] *La Grippe: Clinique, Prophylaxie, Traitement.* Par le Dr. Pierre Lereboullet. Paris: J. B. Baillière et fils. 1926. (5¼ × 7¼, pp. 144; 10 figures. 8 fr.)

ROYAL MEDICAL BENEVOLENT FUND.

AT the last meeting of the committee forty cases were considered, and £440 was voted to thirty-one applicants. The following is a summary of some of the cases relieved.

Daughter, aged 66, of L.R.C.S. who died in 1883. She used to make about 25s. a week by teaching, but since an attack of influenza two years ago she had been unable to work. A friend left her £42 a year, and she receives £16 from a relative; her rent is 6s. a week. Voted £18 in twelve monthly instalments.

Widow, aged 58, of L.R.C.P. was a clerk until Christmas, 1924, but has found it very difficult to get a post since. Her late husband was an annuitant of the Fund. The applicant receives £52 from the rent of a house, but has to pay interest on mortgage and ground rent and repairs. Voted £5 while seeking employment.

Daughter, aged 53, of M.D. who died in 1913. She has maintained herself by taking temporary posts as a clerk, but owing to recent illness has asked the Fund for further assistance. She has an annuity of £40. Rent and gas amount to £44 per annum. Private typewriting and clerical work brought her in about £78. Relieved twice £17 10s.; voted £12 in twelve monthly instalments.

Daughters, aged 64 and 66, of M.R.C.S. who practised in Wales and died in 1873. They live in a two-roomed hut for which they pay £1 per annum ground rent. One has the R.U.K.A. annuity of £26; they made £5 from poultry, and friends gave £7. Relieved ten times jointly £154. Last year voted £24 each in monthly instalments, which was renewed.

Subscriptions may be sent to the Honorary Treasurer, Sir Charters Symonds, K.B.E., C.B., F.R.C.S., at 11, Chandos Street, Cavendish Square, London, W.1.

The Royal Medical Benevolent Fund Guild still receives many applications for clothing, especially for coats and skirts for ladies and girls holding secretarial posts, and suits for working boys. The Guild appeals for second-hand clothes and household articles. The gifts should be sent to the Secretary of the Guild, 58, Great Marlborough Street, W.1.

of carrying out his ideas. Some men would have rested content with having founded and supported such institutions as the laboratory at Khartoum and the Historical Medical Museum in London, but these, great as they are in interest and in usefulness, form a comparatively small part of Mr. Wellcome's contributions to the progress of research and of scientific education. The ceremony was held in the hall of the new house erected by the Society of Friends in Endsleigh Gardens. Mr. Neville Chamberlain, who presided at the opening ceremony, attributed the extraordinarily rapid advances in scientific knowledge of late years to the free intercommunication of ideas and discoveries between workers all over the world. No doubt there is much in this explanation, but we are more inclined to lay stress on the development of education and the enormous increase in the numbers of those who give their lives to research and invention, fostered by endowments, and by the enlightened self-interest of leaders of industry such as Mr. Wellcome. Sir Walter Fletcher gave an address on research and citizenship, in the course of which he drew attention to the way in which capitalism had rendered scientific advances possible, whether the capital in question was in private hands or had been given by public-spirited individuals to public institutions or corporations. He mentioned Charles Darwin, among others, as an instance of the former kind, and Sir Isaac Newton of the latter. Trinity College, Cambridge, supplied Newton with the necessaries of life as well as with instruments of research, and Darwin could never have devoted himself to his life-work had he not inherited private means. As Sir Walter Fletcher pointed out, while the Bureau of Scientific Research and the laboratories are devoted to discovery, the museum is intended to be a great educational force — "a sumptuously illustrated textbook" designed to supersede to a great extent the old oral method, which was well enough when books were few and museums non-existent. The museum is intended to interest and instruct the layman as well as the professional student, so that he may realize in some degree the meaning and the importance of scientific research; and the lessons somewhat tardily learned by the captains of industry during the last quarter of a century may be also driven home to the minds of the great body of intelligent citizens, who will thus learn to "understand something of the difficult and lonely path the pioneer investigator has to follow." Sir John Rose Bradford, in proposing a vote of thanks, drew attention to the fact that the meeting was held in the building erected by the Society of Friends, and that one of that body—Mr. Joseph Jackson Lister, father of Lord Lister—rendered minute investigations more practicable by his improvements of the achromatic microscope. Inspection of the museum and laboratories followed on the formalities of reopening, and all must have been struck by the excellence of the arrangement of the wealth of material displayed and the systematic way in which the intended lessons were set before the beholder. Mr. Neville Chamberlain showed his interest by spending a good deal of time in the museum, guided by the director-in-chief, Dr. C. M. Wenyon. The museum consists of twenty small halls and numerous laboratories and workrooms, as well as a library; but we are told in the handsome illustrated book presented to visitors that, large as the exhibit is, it can only be regarded as a beginning. We wish continued success and expansion to all the institutions under the control of the Wellcome Foundation Limited.

AN ULTRA-VIRUS OF TUBERCLE.

STRUCK by the high mortality among infants born of tuberculous mothers, Drs. Calmette, Valtis, and Lacomme have carried out at the Baudelocque Clinic in Paris investigations into the causes of their death. Observations on 357 infants born from 356 tuberculous mothers, together with reports by the three investigators on a certain number of those infants who died or were born prematurely, were communicated last month to the Académie de Médecine by Dr. A. Couvelaire. Dr. Calmette and his colleagues have come to the conclusion that, apart from trans-placental transmission of tubercle bacilli *in utero*, which must be very rare, it is legitimate to assume that there can be transmitted through the placenta a virus of tubercle, which does not produce any specific anatomical lesion, but is indicated by the presence of an acid-fast bacillus in the lymphatic glands and viscera of the infant. The fluid from the glands or viscera, even after filtration through porcelain, will cause the same acid-fast bacillus to appear in the glands when injected into guinea-pigs. The result is the same whether the fluid is obtained from prematurely born foetuses, from infants who die in the first few weeks, or from those who die of common complaints and without progressive malnutrition. The infants from whom the fluid was obtained had been entirely separated from their mothers, and had not received doses of the vaccine B.C.G. Drs. Calmette, Valtis, and Lacomme have thus been brought to assert the existence of an ultra-virus of tubercle, capable of transmission through the placenta as through a filter; a virus of which Koch's bacillus is a resistant form. Dr. Couvelaire's report brings out also the interesting fact that since 1923 the mortality among the infants of tuberculous mothers in the clinic has been reduced from 33 to 7.2 per cent. The higher mortality was due to imperfect separation of the infants from their mothers. The improvement has been brought about by employing wet-nurses, by the careful introduction of artificial feeding, and by the employment of trained and attentive nurses.

MIRROR-WRITING.

THE classic instance of mirror-writing is the notebooks of Leonardo da Vinci. Leonardo is supposed to have deliberately adopted this style of script as a sort of code to protect his writings from ecclesiastical censorship. But in certain of his drawings also the obliquity of the shading suggests that the pencil was held in the left hand, and Cardinal Louis of Aragon, who visited him during the last two years of his life, stated that he was suffering from some form of paralysis which impaired his manual power. It seems possible, therefore, that the mirror-writing of the man whom Browning assigned to cover one of the walls of the New Jerusalem was a consequence of right hemiplegia. Dr. Macdonald Critchley, who read a paper to the Neurological Section of the Royal Society of Medicine on December 9th, showed a number of examples of mirror-writing by right hemiplegics, but he added that the same phenomenon was found in some normal children just learning to write, as well as in more backward and feeble-minded children, in whom it was particularly associated with left-handedness. He recalled that mirror-writing was not uncommon among the insane also, and it was seen, again, in cases where there was partial switching off of consciousness or attention, as in certain states of hysteria, during the effect of depressive poisons, and in mediums at spiritualistic séances. Mental abstraction might in some cases lead to mirror-writing, and telegraphists had been observed to jot down messages mirror-fashion with their left hand while their right hand was on the keys. Dr. Critchley expressed the view that an adequate explanation of the condition would include both physiological and psychological causes, which entered in different proportions into different cases. From a physiological point of view it had to be remembered that centrifugal movements were the most common for both hands, and that most of the natural movements of one hand were the mirrored replica of those

of events. In some instances the history given is clear, to the effect either that the handle was torn from the grasp and flew round and struck the forearm or wrist, or that, despite the explosion, it did not leave the chauffeur's hand. But in other cases all that the sufferer knows is that something happened and he found himself nursing a damaged limb. The precaution adopted by many chauffeurs of keeping the thumb behind the handle, parallel with the second metacarpal bone, instead of encircling the handle, does not seem to be very efficacious, probably because the consequent position of dorsiflexion is obnoxious.

Out of the forty-two cases recorded by Mr. Edwards, ten were situated at the junction of the middle and lower thirds of the shaft of the radius. (In one the ulna also was fractured.) These were all almost certainly due to direct violence. In eight the fracture was through the base of the styloid process of the radius, with or without fracture of the styloid process of the ulna. There were seven cases of "Colles" fracture, usually from indirect violence, six of "high Colles"—that is, from 1½ to 2¾ inches above the lower articular surface of the radius—probably due to direct violence. In four the lesion was separation of the radial epiphysis, and in two fracture through the styloid process of the radius and posterior margin of the radial articular surface. The remaining five cases are classified as "mixed types," including injuries to the carpal and metacarpal bones. It thus seems probable that far more fractures are caused by indirect than by direct violence. It is of interest to note that in young persons (15 to 20 years), instead of separation of the epiphysis, as might have been expected, fracture occurs.

As to treatment, Mr. Edwards prefers Carr's splint after manual reduction, verified by x rays after the splint is applied. Early massage is to be avoided. When the fracture cannot be correctly reduced, or in old neglected cases, open operation and osteotomy is recommended. It is most important to correct the backward tilt of the lower fragment, which interferes with the proper play of the extensor tendons. In old cases the excision of a wedge of bone or the performance of a curvilinear ("ball and socket") osteotomy may be necessary to achieve this. For other interesting details of diagnosis and treatment we refer the reader to the original paper, which is worth study.

With the increased use of self-starters this injury may be expected to become rare among the drivers of light passenger and private cars, but the engines of the enormous and increasing number of heavy lorries, omnibuses, and charabancs are still started by hand, so that we must look forward to a continued supply of backfire fractures among their drivers for some time to come.

The publication of this paper, based on experience obtained in the fracture department of King's College Hospital, illustrates the advantages of this form of specialization. Had these forty-two cases been scattered among the services of various surgeons their systematic treatment and their collection and study would have been more difficult, and such results as could have been attained and recorded would almost certainly have been less valuable to the student and pathologist, and, last but not least, less satisfactory to the patients. We devoutly hope that the example of King's College and some other hospitals in the provinces as well as London will be generally followed as regards the treatment of fractures.

GIFT FOR MIDDLESEX HOSPITAL NURSES.

AT a recent meeting of the court of governors of the Middlesex Hospital it was announced that Dr. W. Essex Wynter, consulting physician to the hospital, had formulated a proposal to devote, after his and Mrs. Wynter's deaths, his house, known as Bartholomew Manor, Newbury, and two groups of sixteenth century cottages, together with an endowment fund for their maintenance and upkeep, to the Middlesex Hospital, to be held in perpetuity as a home for retired members of the nursing staff. Bartholomew Manor is possibly the oldest intact dwelling-house in the country. As a social unit the manor certainly existed in Saxon days, consisting at the time of the Conquest of thirty primitive huts or hagea. Pembroke, the Earl Marshal, owned the manor in Stephen's time, and, siding with Matilda, he was involved in a dispute with the Church and was cursed, him and his seed; though each of his five sons succeeded to the manor of Newbury none left male issue. In the reign of Richard II the manor was valued at £3, while later the manor house and demesne lands were associated with Sandteford Priory in the diocese of Salisbury. The ownership finally passed into the hands of the Crown, and Charles I granted the manor to the town of Newbury for a consideration, while the Church became possessed of the demesne. The Ecclesiastical Commissioners eventually parted with the freehold in 1888. Dr. Wynter is now in possession of the manor house, a demesne of four acres, and two groups of cottages. One group of four cottages fronts upon the pre-Roman road from Gosport to Birkenhead at the eastern boundary of the manor, and faces inwards over a little courtyard and low brick wall to where, across a long lily pond, lies the old garden of the manor. The other group lies south of the manor, and consists of twelve cottages built in 1550. These buildings were recently acquired from the corporation of Newbury on the undertaking that the group should be preserved in perpetuity. The manor house itself has been reverently and sympathetically restored, and the cottages are gradually being reconstructed with contemporary material, purchased here and there all over the country, so that the design and character of the beautiful old buildings is being preserved, while the interiors are being arranged to provide a comfortable sitting room, bedroom, kitchen, and modern bathroom. Two retired sisters are already living in two of these self-contained homes, and eventually there will be accommodation for some sixteen sisters and nurses, each independently housed, yet with a community interest and with spacious beautiful rooms in which to meet. This magnificent gift, unique alike in its beneficent purpose, its self-sufficiency, and its historical and artistic interest, has been received by the authorities of the hospital with the deepest gratitude. For many years Dr. Wynter has been devoting himself to the work of restoration and preparation, and by his thoughtful generosity he is providing a place of great comfort and happiness to which members of the nursing staff of the Middlesex Hospital will be privileged to retire. They will be fortunate.

THE WELLCOME RESEARCH INSTITUTIONS AND MUSEUMS.

THE reconstructed and enlarged museum and laboratories of the Wellcome Bureau of Scientific Research, which were reopened by the Minister of Health on December 8th, would surely have delighted the late Sir Jonathan Hutchinson, who put so high a value on the teaching power of a properly arranged and equipped museum, and showed his faith in them by maintaining three such at his own cost. Mr. Henry S. Wellcome, whose absence was regretted at the ceremony, may be said to have the Hutchinsonian vision, and fortunately is blessed with much greater means

the year. The report gives a summary of the protean sequelae—moral, emotional, intellectual, and neurological—of the disease. The routine procedure in the unit is to give at first no treatment except ordinary school and hospital discipline. Later a complete physical and mental examination is made, and the patient is classified, and thereafter a record of progress is kept. Pituitrin and thyroid extracts have been given when endocrine balance is upset, and hyoscine, belladonna, nicotine, and parathyroid in Parkinsonian cases; sunlight treatment, massage, gymnastics, and electricity have also been used, and luminal and bromides in restless cases. Most of the children showed psychic changes; milder cases did well with the ordinary discipline of the unit, away from home surroundings and the liability to be spoilt or brutalized. Severer cases, with querulousness, outbursts of temper, lying, thieving, sexual erotism, etc., improved only slightly, and showed a tendency to relapse. Dr. Borthwick advised that the unit should be continued for at least another year for further observation and research, and his recommendation has been approved by the Metropolitan Asylums Board. The report concludes with observations by Dr. T. H. Whittington, the visiting oculist, on ocular signs in 99 of the children. His general impression is that the ocular signs so common in the acute stage of the disease are comparatively rare in the post-encephalitis stage. Nineteen children, however, showed weakness of convergence; in twelve cases there was marked external stabismus; while the screen test showed the same symptom in six other cases.

THE CARE OF THE MENTALLY DEFECTIVE.

SEVERAL circumstances have lately combined to draw attention to the question of the provision that should be made for the mentally defective. At the recent conference held under the auspices of the Central Association for Mental Welfare one session was devoted to a consideration of the care of the mentally deficient outside institutions, and another to the need for the careful selection of children for special schools and the training of teachers for service therein. The Mental Deficiency Bill, which has been before Parliament this session, has been withdrawn, owing to the opposition which has developed at a late stage, due, it would appear, chiefly to objections to the definition of mental deficiency it contained, which is considered to be too wide. With the bill the hope of an administrative reform which has long been desired disappears; the bill proposed to give additional powers both to education and mental deficiency authorities in the classification of children leaving the special schools. It would have allowed education authorities to notify to the mental deficiency authorities children leaving the special schools, not merely for institutional care and for guardianship as hitherto, but for supervision also. Several important institutions for the feeble-minded have just issued their annual reports, and it is interesting to note and compare two of these which have been sent to us from the same area—that of the Royal Albert Institution, Lancaster, for the feeble-minded of the northern counties, and that of the Lancashire and Cheshire Society for the Permanent Care of the Feeble-minded, with special reference to the Sandlebridge Institution. It is increasingly recognized, as was emphasized at the conference above referred to, that while feeble-mindedness must always of necessity remain a lifelong condition, quite a large proportion of those so afflicted are by no means anti-social in their behaviour, and can even be described as not entirely unsuccessful members of the community in the more humble spheres of life. With suitable instruction in the special school up to the leaving age of 16 years they are able, with a small amount of sympathetic supervision and control, to fill a useful place in society. A large number of mentally defective persons, though probably a minority of those above the class of imbeciles, need permanent care in institutions or colonies. They need this for their own safety and happiness, for the relief of those who would otherwise be overburdened and crippled by the care they would have to give them in their homes, and in order to protect the community from their anti-social behaviour and relieve it from their complete economic uselessness. The former of the two institutions named above has the permanent care of some 800 inmates, and the latter of about 320. They are supported by payments from public authorities on account of feeble-minded persons for whom such authorities are responsible, and by voluntary contributions. A large number of devoted workers, paid and voluntary, medical and lay, are associated with their work and contribute to its success. The accommodation provided by such institutions throughout the country is as yet quite inadequate to the needs of the situation, and further pressure from public opinion and further increase of private benefaction are both required in order to stimulate further provision. The general nature of the work done in such institutions can be gathered from their annual reports. The variety of occupations or trades in which the inmates are instructed and engaged is very wide, and it is interesting to note how largely many of these, especially gardening and farming, are carried towards economic success, in addition to their great value for mental activity and social usefulness.

VISUAL STANDARDS FOR MOTOR DRIVERS.

THE increase in the number of accidents due to motor vehicles is naturally arousing a good deal of public attention, and there have been demands for the routine physical examination of drivers, especially of heavy commercial vehicles, before a licence is granted. It may be interesting, therefore, to recall the recommendations made about a year ago by the Ophthalmological Section of the American Medical Association with regard to vision of drivers of motor vehicles; they are two in number. The first was that the applicant must have vision of at least 20/50 in one eye and of at least 20/100 in the other eye, with or without glasses; applicants with less vision than 20/100 in the poorer eye may, under certain conditions, be qualified by a special board or county board. The second was that double vision shall disqualify. Each State was advised to establish a board consisting of two general practitioners or surgeons and one ophthalmologist, and that to it should be referred doubtful cases. It was suggested that persons with vision less than 20/100 in the worse eye, or even when this eye is blind, may in some cases be passed provided the vision of the remaining eye is superior to the general standard, and reaches 20/30 without the aid of glasses. It was ascertained that fifteen States required all drivers to be licensed; twenty require licences for those who drive for pay; owner-drivers do not need licences. Thirteen States require no licences at all. Thirteen States provide that all applicants for drivers' licences must pass a specified examination. The tests are varied; some relate to vehicle regulations, others to the mechanism of motor vehicles, personal road demonstrations, and one subjects wage-earning drivers to both an oral and a written examination. Twenty-two require no examination. Pennsylvania is the only State in which the law is mandatory for all drivers, providing that no licence shall be issued to any person who is physically incapacitated. A physically incapacitated person is defined as "any person who has lost the use of one hand or both, or who has lost the use of both feet, or whose eyesight is so impaired that with the aid of glasses he cannot distinguish substantial objects clearly at a distance of 150 feet, or who shall have less than 20 per centum of normal vision . . . or shall have less than 2 per centum of normal hearing."

of the other. The right hand, for instance, drawing a line with chalk on the blackboard, would draw naturally from left to right, and the left hand from right to left; the circle would be drawn clockwise with the right hand, anti-clockwise with the left. The repetition of such a highly complex act as writing facilitated subsequent performance of the same act, which became more automatic and less a matter of attention. But the question was, why did not everyone write mirror-fashion when using the left hand? The main reason, he suggested, was education. People had learned, as the result of experience, that writing, in European languages, ran from left to right; consequently mirror-writing struck them as being incorrect. But in certain cases in which this faculty of perception was in abeyance mirror-writing was apt to appear, and severe damage to the left brain also favoured this manifestation. Even in the normal and educated child the habit of forming such letters as "s" and "m" the wrong way round might persist for some time. Except in hemiplegia and congenital word-blindness, the mirror-writing patient usually realized that something was wrong with his script, and as a rule he could not read it. Dr. Critchley had also some interesting reflections to make on the influence of the ancient alphabets. The Phoenician, from which the modern alphabet was derived, ran from right to left, and for a long period there was considerable doubt as to the orientation of words. In some ancient inscriptions the lines were found reading alternately from right to left and from left to right. A change in direction probably corresponded to an alteration of the handedness of the race. In the ensuing discussion Dr. George Jones said that although he had had the opportunity of observing many who wrote Hebrew, which was written from right to left, he had never come across one who wrote in the reverse direction, and it was interesting to speculate what sort of script would be produced by a writer in Hebrew or Arabic, the only two living Semitic languages, who took to mirror-writing. Dr. Critchley, however, said that he had had one patient who, though she spoke English, could write only Hebrew; and she had right hemiplegia, and thereupon wrote Hebrew mirror-wise—she still wrote the words as a whole from right to left (the proper direction), but she formed the letters the wrong way round, so that, to give an illustration in English, the "b" would be a "d." Dr. Percy Smith said that in his experience of mental cases he had not come upon one case of mirror-writing, but he himself, having been originally left-handed, and acquiring right-handedness, was able to do mirror-writing, and he recalled that a fellow student of his at St. Thomas's many years ago used to keep his notes in mirror-writing, apparently to prevent cribbing. Dr. Millais Culpin, in some interesting remarks on left-handedness, expressed the view that at some period the Semitic peoples must have been left-handed, and he quoted two passages in the Book of Judges (iii, 15-21, and xx, 16) in which emphasis was laid upon the skill of the left-handed. In Dr. Culpin's view left-handedness persisting in a right-handed race might be originally an expression of antagonism to environment or an unconscious protest against arbitrary conventions. Stammering, too, which resulted when the left-handed was constrained to use his right hand for the purposes for which he had hitherto used his left, was in the nature of a protest. A left-handed father frequently had a stammering child, possibly because, being a person of gentle obstinacy, he had pushed the child firmly and steadily along a particular road, and the stammer was a symptom of rebellion. As an instance of the curious manifestations of these reversals, Dr. Culpin mentioned the case of a girl who, when writing to her mother, always used her left hand and wrote mirror-fashion, but to her father and others wrote in the normal way.

SIR JAMES CRICHTON-BROWNE.

In his long life (for, in spite of perennial youth, he has many years of experience, grave and gay) Sir James Crichton-Browne has played many parts: as a scientific alienist he trained many in his special subject, and made the West Riding Asylum famous for the men who worked there for a time, such as Sir Clifford Allbutt, Sir William Turner, and Sir David Ferrier; as Lord Chancellor's Visitor in Lunacy for many years; at the Royal Institution; and as prince of speakers, especially after dinner. In *Victorian Jottings from an Old Commonplace Book*[1] he has followed the example of his brother, the late Balfour Browne, in revealing some personal reminiscences, but they are veiled in the form of extracts from notes kept since student days, and, indeed, going back in substance to even earlier times. The reader, as he turns the pages full of kindly wit and shrewd wisdom, and now and then varied by deep feelings, as in the few lines on "The Death Chamber," can hardly help recalling Sir James's spoken words, with ever happy phrase and appropriate story to adorn his point. Though a number of the "jottings" concern the humours of his professional experience, they do not, so to speak, smell of the shop. How seldom it is that a book like this, brimming over with stories, does not serve up at least a few venerable chestnuts; but Sir James has apparently given us only of his private store, and of personal experience. Many are the interesting personalities who appear, and of his own profession no one except Lord Lister has left such a deep and gracious impression as Dr. John Conolly of Hanwell, described as "a Wilberforce who devoted his life to the abolition of slavery of a particularly grievous kind." The coloured frontispiece is a most pleasing and life-like portrait of the author by "Spy." It is safe to predict that these jottings, which are Victorian only in date, will rapidly be sold out, for everyone who reads them will be struck with the idea that the book would make an appropriate Christmas present for his friends.

A UNIT FOR THE RESIDUA OF ENCEPHALITIS LETHARGICA.

LAST year the Metropolitan Asylums Board decided to establish at its Northern Hospital, Winchmore Hill, an experimental unit of 100 beds for children between 3 and 16 years of age suffering from the after-effects of encephalitis lethargica. Patients were admitted on November 13th, 1925, but the accommodation was not fully used until last April. The Board has now received from Dr. G. A. Borthwick, medical superintendent of the hospital, a report on the first year's working of the unit. Observation and research were at first hampered by the difficulty in securing resident medical officers, and no very definite curative results have been obtained so far; but the experiment has been full of interest, and the unit should at least prove valuable as a clearing house for patients suffering from the residua of encephalitis lethargica. On the advice of Dr. S. A. Kinnier Wilson, consulting neurologist to the Board's mental hospitals, no patient below the age of 3 years was accepted; hopelessly bedridden and slight cases with very few physical or mental symptoms were refused; patients reduced to the level of mental defectives were sent elsewhere; and no case of doubtful diagnosis was taken. The number of cases admitted during the year was 133. Of these, 12 have been discharged much improved, 6 were found to be in such a condition that further improvement was unlikely, 4 cases were unsuitable for the unit, and 18 patients were removed by their parents. The remainder are still under treatment. No death occurred during

[1] *Victorian Jottings from an Old Commonplace Book*. By Sir James Crichton-Browne, M.D., LL.D., F.R.S. London: Etchells and Macdonald. 1926. (Demy 8vo, pp. vii + 344; 1 plate. 15s. net.)

was quite impossible for judges or other people to dig themselves into the trenches and to resist the gradual development of the law in respect to matters such as these.

In conclusion, the Lord Justice added that there was another medical question which had become of very great importance in the sphere of law of recent years. It had been his lot during the last few weeks to deal with cases under the Workmen's Compensation Act, and he had been very much struck with the large proportion of cases which arose now in connexion with industrial diseases. The schedule of industrial diseases had been extended from time to time, and would be further extended as medical knowledge increased and as administrators became more receptive to the advance of such knowledge. There was no doubt that this was a most humane provision. He thought it would be to the great advantage of members of the legal profession who practised in such matters that they should become more or less familiar with the kind of problems that arose in respect to industrial disease, and very important for medical practitioners also who practised in industrial districts that they should familiarize themselves with the questions of law that arose in the working of the Act. There were a good many pitfalls in the Act still, and he could imagine nothing more useful than a mutual arrangement of lectures on the subject, lawyers lecturing to doctors on the one hand, and doctors to lawyers on the other.

England and Wales.

Complimentary Dinner to Sir Berkeley Moynihan.

Sir Berkeley Moynihan, Bt., P.R.C.S., was entertained at dinner at Leeds, on December 8th, by his colleagues of the British Medical Association in Yorkshire. Mr. Alfred Gough, chairman of the Leeds Division, presided, and proposed the toast of the evening, "The President of the Royal College of Surgeons." He said that the election of Sir Berkeley Moynihan did not amount to the conferment of a distinction, but rather the recognition of distinction. Sir Berkeley Moynihan had been for a quarter of a century one of the most prominent figures in British surgery, and his supremacy was unchallenged in the sphere of the upper abdomen. His wide knowledge of literature, art, music, and the drama was well known, and his marvellous physical energy and capacity for work resulted in a uniform efficiency of 100 per cent. Mr. A. L. Whitehead, consulting ophthalmic surgeon to Leeds General Infirmary, referred to the association of Sir Berkeley Moynihan with Jessop, McGill, Ward, Littlewood, and Mayo Robson at Leeds Infirmary, and added that he had acquired the best from all of them. The publication of his book *Abdominal Surgery* had aroused the profoundest interest throughout the world, and particularly in America. After referring to Sir Berkeley's insistent attention to detail and his wide general outlook, Mr. Whitehead said that his great powers of organization and administration had brought him fresh honours during the war, while as a writer he had produced many works of great distinction, literary value, and clarity of expression. His latest effort—the appeal for the Cancer Research Fund, which had brought in £130,000—owed its success to his great influence and power of putting a case. Dr. A. Hawkyard paid special tribute to Sir Berkeley's gift of oratory and his mastery of the written word.

Sir Berkeley Moynihan, in response to the toast, mentioned that he had been originally intended for the army, but he had chosen the path of saving life rather than destroying it. In his student days, and later, he had owed everything to Jessop and McGill. The pre-eminence of Leeds in surgery was due to its having produced such men with great creative minds as Spencer Wells, William Hey, and Mayo Robson, together with many great exponents of the new ideas in surgery. When he first joined the staff at Leeds Infirmary there was little reciprocity between surgeons, and so he had established the first surgical club in England; that club had now three descendants, only one of which had flagged. After a great many difficulties the *British Journal of Surgery* had been founded to give to surgery a chance of expression through the medium of a periodical devoted exclusively to its science. The real heritage which a man could give his profession was the training of men inspired by his ideals. He thought that the chapter of the Listerian epoch was now closed, and that surgery would now advance by harking back to biology in its broadest sense, and by proceeding hand in hand with physicists, biochemists, chemists, and pure physiologists. Such was the conception behind the present Cancer Campaign, and he was proud to know that Leeds had at its disposal for research more money than any other place in Europe. The tribute he had received that night touched him very deeply as relating to something he valued even more—namely, the tradition Leeds had set up a century and a half previously, and had never allowed to weaken since. He valued most the acknowledgement by the people among whom he had lived and worked that he had been loyal to this great tradition.

Proposed Sports Ground for London University.

An appeal for funds for an athletic ground and boat-house is being issued by the University of London, and eleven medical members of the Senate have addressed a letter in support of it to all medical graduates of the University and medical practitioners who were educated in the metropolitan medical schools. Some twenty-eight acres of land have been secured at Motspur Park, near Wimbledon, for about £18,000, and for the boat-house two acres of land at Chiswick at a cost of £4,000. The total cost, including the preparation of the ground, the building of the boat-house, and an endowment for running expenses, is over £70,000, half of which it is estimated will be met by contributions from the colleges, schools, and students. The Chancellor, Lord Rosebery, has given £5,000, and the Senate has also granted £5,000. In view of the prominent position in the University of the faculty of medicine and the existence in London of so many leading medical schools, it is hoped that members of the medical profession will subscribe generously towards these urgently needed facilities for students. Cheques should be made payable to the "University of London Athletic Appeal Fund," and be sent to the Financial Officer, University of London, South Kensington, S.W.7.

Medical and Dental Treatment of London School Children.

It was reported to the London County Council on December 14th that the attendances of school children at the treatment centres had been satisfactory during the past year. The demand had been greater than could be conveniently dealt with at the centres, in part owing to the reluctance of the general hospitals, except under the Council's scheme, to treat school children to the same extent as formerly. Some 4,000 additional children requiring eye treatment were noted at the routine inspections during 1925 as compared with 1924. Five in-patient centres for throat operations have been approved; three of them are open, and the other two will be ready in January. Arrangements have also been made with the Princess Louise Hospital, North Kensington, and the Victoria Hospital for Children, Chelsea, for the treatment of 500 and 440 throat cases respectively a year as in-patients. The gradual decline in the number of cases of ringworm, owing to the successful results of *x*-ray treatment, continues; provision is to be made for only 1,300 such cases next year. The six centres at present in operation for remedial courses for stammering children are to be continued. The total cost of the arrangements during the next financial year will be £97,878, of which treatment for diseases of the eye, ear, nose, and throat, and for ringworm accounts for £23,066, of minor ailments for £27,066, and of dental cases for £43,916. The total represents an increase of just over £3,000 on the expenditure authorized for the current year.

Practitioners' Fees in Midwifery Cases.

The Midwives and Maternity Homes Act, 1926, provides that any medical practitioner called in to the assistance of a midwife shall submit his claim for payment within two

THE MEDICO-LEGAL SOCIETY.

LORD JUSTICE ATKIN AND MR. JUSTICE GREER ON "IRRESPONSIBILITY."

THE annual dinner of the Medico-Legal Society took place on December 10th, with Lord Justice ATKIN, the president of the society, in the chair. Among the guests were Mr. Justice Greer, Sir John Rose Bradford, P.R.C.P., Dr. A. H. Coley (president, Law Society), Sir T. R. Hughes, K.C. (president, Council of the Bar), and Lieut.-Colonel C. T. Samman (warden, Apothecaries' Society).

The toast "Medicine and the Law" was in the hands of Dr. A. S. WOODWARK, who gave some amusing instances of how medical men in the witness-box had "floored" the cross-examiner. He himself appeared as witness in one case which turned upon the question whether a head injury could have been inflicted with a hammer. In reply to repeated questions from the barrister, he maintained that the injury could equally have been inflicted by a hammer or by a fall, and added that there was no standard for the force with which a hammer might be used. "That is what I understood you to be saying for the last five minutes," said the magistrate; "there is no standard for the force of a hammer, or for the thickness of a skull!"

Sir JOHN ROSE BRADFORD elaborated the customary parallels between the legal and the medical professions. Both had the same objects, the elucidation of truth and the welfare of the community, but they went about it in different ways, and he confessed that the way in which the law arrived at its conclusions, by opposing arguments before a jury of twelve persons, struck him as curious. Perhaps the main difference between the problems which the law had to solve and those which confronted the medical profession was that the former were set by men and the latter by Nature. The latter, accordingly, were the more complex and difficult, and there was no appeal. Dr. COLEY, who also responded to the toast, quoted a dictum which he attributed to Gladstone—that the two professions must always flourish, because the one is founded on disease and the other on dissension.

Mr. Justice GREER, who proposed the health of the Medico-Legal Society, said that members of both professions had to make important inferences from imperfectly ascertained facts. The medical man had to judge a patient's health or malady without absolute information as to his interior condition, and to some extent from subjective symptoms; while those who sat on the bench had to decide an issue on the evidence of witnesses whose observations might be imperfect, and whose honesty, in some cases, left much to be desired. But on the whole both professions arrived at sound conclusions. Their work was not entirely on parallel lines, for they were often brought into contact, and occasionally into conflict. In two branches of work medical men and lawyers were alike interested. One of these was the effect of nervous shock. It was extremely difficult to judge the precise nature of such an effect, and for his own part he was always inclined to give the benefit of the doubt to the sufferer. The other subject was mental disease. Here many doctors took a different view from the lawyers, though he did not think there was so much difference between the two as at first sight appeared, because the problems which the two professions had to investigate were not the same. The problem at a trial was not whether an accused person was suffering from mental disease, but whether the mental disease was of such a character that he was not responsible for his actions, or, to apply the M'Naghten test, whether his mind was in such a condition that it was not influenced by the fear of punishment. People who could be influenced by the fear of punishment should, in the interests of society, be punished for wrong-doing. But it did not follow that a man who was held to be not insane within the meaning of the criminal law was a man not subject to mental disease. The law was compelled to act with great stringency, though the effect of it might at times be modified by those who advised His Majesty in the exercise of his prerogative of mercy. Personally he thought that juries were inclined to take the medical view, influenced no doubt by what was known as the "unwritten law," and to find insanity where, strictly, according to the criminal law, it ought not to be found.

Lord Justice ATKIN, in responding, said that the Medico-Legal Society was in a very healthy condition, with a membership of over 300. The interesting proposal had been made that the society should be represented at the meeting of the British Medical Association in Edinburgh next July, when the Section of Forensic Medicine would meet under the presidency of one of the society's distinguished members, Professor Harvey Littlejohn. He himself had been asked to serve as Vice-President of the Section, but unfortunately the meeting was held at a time of year when his judicial duties made it impossible for him to attend. Taking up a remark of Dr. Woodwark's to the effect that while the law dealt in dogmatism and certainty, the doctor was concerned with theories and possibilities, the Lord Justice said that he was not sure that, unaided, he would have arrived at that conclusion. He was bound to defend legal procedure, and he thought that there was no better way of arriving at truth than a close examination and cross-examination of witnesses, and if medical men practised a similar method in dealing with their cases they might be more sure of their diagnoses. Sir John Rose Bradford had said that it must be difficult for a jury to arrive at a verdict. Certainly it was, especially because, on occasion, the twelve honest men had to decide, not only when lay testimony conflicted, but when eminent doctors gave contrary evidence, so that from medical evidence it might not even be possible to say whether a collar-bone had been broken! Nevertheless, he thought that both doctors and lawyers achieved a considerable degree of success.

On the question of insanity and criminal responsibility (Lord Justice Atkin continued) there was a time when the two professions were in constant opposition, but to-day the conflict between insanity as understood by lawyers on the one hand and by doctors on the other had lost its sharpness. The reconciliation of the views of the two professions was very important, and he begged all concerned to abstain from epithets and from language which indicated a want of appreciation of the other point of view, and tended to emphasize the differences between the two professions. He went on to allude to the recommendations of the Committee on Insanity and Crime, appointed by the Lord Chancellor in 1922, over which he (the Lord Justice) presided. The view of the committee was that if a person, owing to insanity, was totally incapable of restraining his actions because of an irresistible impulse produced by the disease, he ought to be held criminally irresponsible. A high judicial authority had pronounced that idea fantastic, but so far from being fantastic the Lord Justice thought it unanswerable. ("Hear, hear.") The doctrine was recommended to the committee by the British Medical Association and by the Medico-Psychological Association, who, although they wanted much more than that, at all events accepted that point of view. It was accepted also by the lawyers composing the committee, including such eminent authorities as Sir Archibald Bodkin, Sir Richard Muir, Sir Herbert Stephen, and Sir Ernley Blackwell of the Home Office. There had never been since English law was administered four men of more complete experience and knowledge of the phenomena connected with crime and the responsibility for crime. Another member of the committee was Sir Edward Troup, formerly Under-Secretary of State for the Home Office, and those who knew Sir Edward regarded as extremely amusing the idea that he would commit himself to anything "fantastic." The Lord Justice instanced a typical case, that of a mother with an impulse to kill her child, who fought against it, prayed to be delivered from it, but gradually found the impulse gaining ground until at last she yielded. The woman knew what she was doing, and knew it was wrong, because she had prayed to be delivered from it; and it appeared to him to be a ridiculous suggestion that in such a case the woman was not criminally irresponsible by reason of the impulse which arose from a diseased mind. The real fact was that every humane person on the bench would see to it that in such a case she would be held criminally irresponsible, even under the present law. It

vitamin-containing parts of food materials could be extracted in highly concentrated form, and he also demonstrated the test by which the vitamin activity of cod-liver oil could be ascertained as satisfactorily as by animal experiments.

Correspondence.

EPSOM COLLEGE.

SIR,—I ask every medical practitioner to be so patriotic to his profession as at least to read this letter. Epsom College needs a new sanatorium and isolation block. The existing one is out of date in its accommodation and arrangements, is uneconomical in its working, and affords no facility for the isolation of infectious cases. This purpose, of such paramount importance in a public school, is at present effected by a wooden hut, which is licensed only for a few years more. The vacated sanatorium would, however, with a limited amount of internal adaptation, provide excellent residential quarters for at least forty more boys, and so enable the council to house some of the numerous applicants whom it has to refuse annually.

Epsom College, as the offspring of the medical profession, should show a sanatorium that would be a model for all other schools to copy. Such an object should appeal to the pride as well as to the philanthropy of the profession, and some £25,000 is a sum that would enable us to gratify both. We cannot hope for many large donations from a profession in which few are rich, but no other profession has more ready access to rich laymen, who may desire to bestow some of their wealth on suitable objects of charity. Here is an object that combines an educational with a philanthropic purpose.

There are over 50,000 practitioners on the *Medical Register*. Ten shillings from each would provide this haven of rest for the reception of sick sons of generations of medical men, and perhaps for your own. But as experience has taught us that such a unanimous response is not to be looked for in our, or indeed in any, profession, we ask those who can to send larger donations to compensate for those who send nothing. Annual subscriptions do not even afford the balance required for maintenance, so that for all structural improvements we have to depend on legacies and extraordinary donations. Remember "Qui facit per alium facit per se," and great gratitude will be due to those who can supplement their own gifts by influencing donations from others.

The donor of £10,000 may give his own name, or the name of any person whom he or she desires to commemorate, to the main block of the sanatorium, and the donor of £5,000 may do likewise to the isolation block. A large ward may be named for £3,000, and a small ward or the casualty department for £1,000, while £100 may determine the name of a single bed. Each medical school might well confer its name on a single bed. Votes at the annual elections of foundationers and pensioners are given for subscriptions and donations to the new sanatorium fund.

This complete scheme should not be beyond the ready accomplishment of the profession with the help of some of those not rare persons who feel that they owe a debt of gratitude to some honoured medical attendant. We can do it, if we have the will to do it, but this condition is an essential prerequisite.

The *British Medical Journal* and the *Lancet*, of their goodness, have promised to publish lists of all subscribers, both small and great, from time to time. I beg you to figure on these lists by sending what you can to the "Sanatorium Fund" to the Secretary at the Epsom College Office, 49, Bedford Square, W.C.1, or to the office of either of the above-named journals to the credit of the fund.—I am, etc.,

RAYMOND CRAWFURD,
Chairman of the Council of Epsom College.

November, 1926.

TREATMENT OF CANCER BY OÖPHORECTOMY.

SIR,—In his observations on the Liverpool demonstration of the lead treatment of cancer (December 11th, p. 1135) Dr. R. G. Canti makes the statement that "it is the first time in history that a generalized treatment has been found that brings about a local disappearance of a cancerous growth." I consider this is incorrect, for the same thing has taken place in mammary cancer under oöphorectomy—in every respect a generalized treatment, and it has done this, not only in my own hands, but in that of others. We have Lett's exhaustive study of 99 cases in support of this fact, and I have in my possession a letter from the late Dr. Herman of London telling me of a case under his care where for an extensive recurrence after removal of the mamma the late Sir Frederick Treves advised amputation at the shoulder-joint. The suggestion was not carried out but oöphorectomy done, with the result that within a year all local traces of the disease had disappeared, the patient living for eight years and dying eventually of a renal tumour. Again, the late Sir Alfred Pearce Gould in his Bradshaw Lecture on cancer (December 7th, 1910) gives two very typical cases of mammary cancer illustrative of the salutary effects of oöphorectomy, and in conclusion, speaking of one of the cases, he says: "I saw this patient last month (November, 1910), after an interval of ten years, and found her enjoying excellent health; the scars of her numerous operations are the only signs that she has ever been the subject of cancer." In veterinary work, Mr. Frederick T. G. Hobday of London wrote me in 1922 that he also finds oöphorectomy serviceable in vaginal cancerous growths of animals.

In view of evidence such as the above I feel I am justified in calling in question the correctness of Dr. Canti's statement that the lead treatment has been the first in history to bring about the local disappearance of a cancerous growth. This effect was observed as far back as 1896 under oöphorectomy. I admit the results in the oöphorectomy cases were often not permanent, and time may show the same feature in the lead-treated cases that now promise well. An explanation of non-permanency in the oöphorectomy cases may be the fact to which Mr. Hobday drew my attention, and that is, that I was wrong in stating that oöphorectomy permanently maintained the milk supply in cows. In three or four years its effect passed off. This being so, the same may take place in the human subject, and account for the reappearance of the cancer. This does not, however, alter the fact that while the effect of the operation remains the cancer is controlled and overcome. I still feel that if we could fathom the *modus operandi* of oöphorectomy in cases of cancer we might get a clue to the nature and etiology of the malady, and that to ignore these results or sweep them aside as valueless is not a wise policy, nor is it prudent to indulge in overlaudation of a remedy until time has set its stamp on its real worth.—I am, etc.,

GEORGE THOS. BEATSON.

Glasgow, Dec. 12th.

LEPROSY: ITS TRANSMISSION AND TREATMENT.

SIR,—Dr. Graham Little reports in your issue of December 4th (p. 1034) an interesting case of leprosy "cured" by vaccine treatment—a method which has been used for several decades either as tuberculin, which gives reactions in leprosy, or as killed lepra bacilli, with occasional recoveries such as occur after almost any treatment. When he goes on to say that "it is the general experience" that the products of chaulmoogra oil have not fulfilled the hopes held out by me, I am at a loss to know whether he is in ignorance of the many hundreds of early leprosy cases which have been cleared up recently by injections of the soluble products of chaulmoogra oil in Hawaii, Fiji, the Philippines, Korea, India, and elsewhere; or whether he seriously contends that the few negative results reported by London dermatologists (mostly in fairly advanced cases, which no one, as far as I know, has ever claimed to be able to clear up with certainty) completely outweigh the positive results in hundreds of cases treated by leprologists with infinitely more experience than it is possible to obtain in this country, working in the endemic areas with many

months of the date on which he was summoned. The London County Council, immediately the Act came into operation, took steps to notify those practitioners who were known to the Council to undertake these cases, but with regard to others it placed reliance upon notices which appeared in the editorial matter of the professional journals. In several instances practitioners have submitted claims after the expiration of the two months prescribed, but the Council took the view that they were not aware of the provisions of the Act, and that it would not be politic to insist upon strict compliance with the law. It was understood that the Minister of Health would be prepared to consider favourably an application by the Council for permission to pay such claims if submitted before the end of 1926.

Scotland.

GLASGOW MATERNITY AND CHILD WELFARE SCHEME.

BRIEF reference was made in the JOURNAL of December 11th (p. 1140) to a pamphlet describing a scheme for maternity and child welfare in Glasgow prepared by Dr. A. S. M. Macgregor, M.O.H., at the instance of the health committee of the corporation. The scheme is under the general direction of the medical officer of health, and the child welfare staff includes eight medical women and thirty-nine nurses. The home supervision of children is carried out by co-operation with a voluntary Infant Health Visitors' Association. There are fourteen local clinics or consultation centres, of which three are new and specially designed. The West Govan clinic, just completed, was erected at the cost of the city. It will be conducted and partly maintained by a voluntary association, under the convenership of Lady Helen Graham, which has for long done pioneer work in the area. In 1925 there were three ante-natal clinics, and three more have since been added. The Glasgow Royal Maternity Hospital forms an important link in this part of the scheme. An infant consultation and an ante-natal clinic are held there and twenty-five beds are reserved for ante-natal cases. Artificial light treatment is provided in the new annexe to the municipal buildings. The running cost for current and carbons has been less than ¾d. for each exposure, which, at an average of twenty-four exposures, amounts to about 1s. 6d. a course. Venereal cases emerging in maternity and child welfare work are treated at district clinics, which constitute a part of the scheme. Milk and meals for expectant and nursing mothers and children up to 5 years of age are supplied to necessitous cases on conditions. There were 1,650,796 pints of milk issued during 1925, at a cost of £17,000. The day nurseries or crèches directly managed by the corporation are five. A kindergarten at Phoenix Park, which belongs to the city, and a similar institution in Anderston under the Queen Margaret College settlement, which is aided by a grant from the city, are staffed by voluntary workers. Three country homes are maintained under the scheme at Mount Vernon, Scotstoun, and Mount Blow for children suffering from rickets, malnutrition, or debility after acute illness. The Garscube Cottage Hospital, to which Sir Archibald Campbell makes an annual contribution of £300, is maintained by the corporation as a country home for mothers. Beds for ophthalmia cases, where required, are available in an adapted reception house. Domestic helps are supplied during the lying-in period, or if a mother is ill and her children are under 5 years of age; they are paid by the corporation at the rate of 5s. a day without food. The charge against the family is graded according to circumstances. Refresher courses are provided for midwives at the Royal Maternity Hospital. During the financial year 1925-26 the total expenditure on the scheme was £122,215. Deducting revenue, mainly Government grants, the balance was £71,896, equal to a rate of 1.663d. The city of Glasgow is to be congratulated on the scope and purpose of the foregoing activities. It is a notable feature of the scheme throughout that, where it comes into touch with voluntary organizations, it co-operates—it does not displace. Administratively this is common sense; it makes for elasticity which, as Dr. Macgregor says in the booklet, is essential to a child welfare scheme, and it secures the practical sympathy of many whose goodwill is highly conducive to the progress and development of such work.

INDUSTRY AND FATIGUE.

An address on industrialism and fatigue was delivered on December 10th by Dr. A. K. Chalmers, late M.O.H. for Glasgow, to the Glasgow Charity Organization Society. The avoidance of industrial fatigue was now, he said, based on accurate knowledge of many factors affecting health. Legislation during the nineteenth century had resulted from the public recognition of conditions injurious to health, but in the twentieth century it had gone further, and inquired into the conditions necessary for maximum efficiency of workers. The present view seemed to be that maximum efficiency was reached gradually with each day of the week, whereas, according to older views, it was supposed to be reached early in the week. It had been found that the best temperature for heavy work was 55° F., and for light work, such as that done in an office, 65° F. Efficient ventilation was also a necessity, as well as adequate food. The new spirit underlying the industrial welfare movement was important, and ought to be extended.

ENTHUSIASM FOR HEALTH.

A lecture was delivered by Professor J. Arthur Thomson on December 7th, under the auspices of the Glasgow Corporation. Taking as his subject "Education towards health," the lecturer made a plea for fostering an enthusiasm for health, which should mean much more than the absence of disease, for it included positive vigour, resisting power, initiative, and joy in living. In schools, the enthusiasm for vigour and fitness might be achieved by hero-worship, by appraising health achievements, by broadening the concept of play, and by evoking admiration for the superb healthfulness of wild animals. The three great informative studies were history, the world without, and the laws of health and happiness. The last were badly in need of emphasis. Every young citizen should understand the general working of the human body, the common-sense ways of fostering health and avoiding disease and the fundamental facts in regard to heredity. For lack of these progress was hampered. When the growing person fell into sub-health a vicious circle was apt to be set up, because energy for exercise, open air, and resistance was sapped and the bodily tone deteriorated. On the other hand, when the thrill of health was increased by exercise, games, excursions, and the like, a virtuous circle was produced, for it was a feature of healthfulness to wish to be healthier still. More biology and natural history should be taught in schools, not only for their own sakes, but as the essential counter-activities in a mechanical age.

VITAMINS IN RELATION TO INDUSTRY.

At a joint meeting of the Edinburgh and East of Scotland Sections of the Society of Chemical Industry and of the Institute of Chemistry on December 8th a paper on vitamins in their relation to industry was read by Mr. F. H. Carr, C.B.E. After tracing the history of vitamins during the past fourteen years, he discussed the action of the different vitamins. Deficiency of vitamin A caused a failure of growth in experimental animals, and of vitamin B a form of neuritis. The absence of vitamin C over a long period was productive of scurvy. Insufficiency of vitamin D in the food of children led to rickets; it appeared to be a substance distinct from vitamin A, with which it had long been confused. For the first three vitamins animals and man were dependent on the vegetable kingdom, but vitamin D appeared to be produced in the animal body by the influence of sunlight or other source of ultra-violet rays, so that when diet was deficient in this vitamin rickets was not developed so long as the growing body obtained a sufficient amount of radiation. Recent work had pointed to the presence of a fifth vitamin, known as vitamin E, which was present particularly in the germ of wheat. The practice of eating white bread, he considered, was thoroughly to be condemned, because it was lacking both in vitamin B and vitamin E. Mr. Carr described methods whereby the

the temperature rises to 102° F. for some days; in severe cases pyrexia may be present for a period up to three months. In streptococcal infections of the tonsils and teeth joint pains sometimes occur, but usually without swelling or redness of the joints. There may be transient systolic murmurs or tachycardia, followed by prolonged convalescence. The condition corresponds with a mild septicaemia, and the nodes would be analogous to the rose spots in enteric and the secondary eruption in syphilis. On this assumption infective material may conceivably pass from one member of the family to another and reproduce the same symptoms, including erythematous nodes.

The bulk of cases of the disease seems to be sporadic. In addition to septicaemia another important cause is a tuberculous bacillaemia. Such a well known investigator as Calmette upholds this view. I reported two cases associated with tuberculous bacillaemia in the JOURNAL for 1924 (vol. i, p. 422), and in the *British Journal of Tuberculosis* for January, 1925, reported other cases and reviewed recent literature dealing with its association with tuberculosis.—I am, etc.,

Derby, Dec. 6th. JOHN A. WATT.

MINER'S NYSTAGMUS.

SIR,—I have just returned, on a visit, from Malaya, and received my copy of the BRITISH MEDICAL JOURNAL for October 23rd, in which is a letter from Dr. Percival, wherein he states that his assertion that there was a notoriously high percentage of cases of nystagmus at the South Moor Colliery twenty-five years ago is correct. Dr. Percival states that his assertion is corroborated by two owners' representatives and one representative of the men, and quotes figures showing the number of men employed.

In justice to myself, I hope you will allow me to make a further statement in support of my contention that the percentage was not anything like so large as inferred from the particulars given to Dr. Percival. In the first place, as to the number of men employed. I have a very good reason to know that in March, 1899, I was receiving contract pay from over 840 miners employed at the South Moor Collieries, of whom at least 800 were householders. This number did not include sons of miners living at home and working in the mines. Besides, there were many other householders and lodgers, employed at South Moor, who were attended by other doctors in the district, so I fail to understand how this number could have shrunk to 300 by 1901; in fact, I know that the number of men employed increased during that period. If Dr. Percival should choose, he could probably obtain from the South Moor Colliery offices, Newcastle-on-Tyne, a detailed account of all cases of illness or accident due to employment during the period he mentions, as all such cases were attended by me and a list of them sent to the company every year. This list would include all cases of nystagmus.

I quite well remember the objection to electric lamps at South Moor, but it was on account of the weight of the lamps themselves, and not any objection to the light as such.

I can only conclude that Dr. Percival's figures may refer to one pit only of those included in the South Moor Colliery, and even so, I must disagree with his contention that the number of cases amounted to anything of importance.—I am, etc.,

R. E. INGRAM-JOHNSON.

North Cross, Windsor Forest, Dec. 7th.

THE MEDICAL REGISTER: "UNTRACEABLE" PRACTITIONERS.

SIR,—The list published in the SUPPLEMENT of September 11th attracted my attention, but the interest became more personal when I found that my son's name graced it; scanning the list more carefully I discovered the names of five Adelaide residents. It then struck me that perhaps the heading was scarcely justified. "Untraceable" practitioners should mean persons who cannot be traced by any means short of those employed by the greatest talent at Scotland Yard, or by the eminent Mr. Sherlock Holmes. Had the General Medical Council's officers noted that there were five graduates of the University of Adelaide on the list it might have occurred to them to have communicated with the University itself, or with the Medical Board of South Australia, which annually forwards a copy of the *Register* to the office of the General Medical Council, and made inquiries as to their whereabouts. If the brilliant idea had occurred to them to ring up Tavistock Square they might have ascertained that all five were still regularly paying their subscriptions to the British Medical Association, and receiving their JOURNALS at the usual address. Had they communicated with the editor of the *Medical Directory* they would probably have received similar up-to-date information. Far be it from me to blame the General Medical Council itself—its members have lately been getting into hot water too frequently—but I do think the methods of the office somewhat effete.

One of the "untraceables" told me to-day that he had taken the trouble to register his second reply, as the first might have miscarried.

A Vice-President of our Association, Dr. W. T. Hayward, C.M.G., some years ago had to pay a considerable fine in order to have his name restored to the list; so too had our Inspector-General of Hospitals (Dr. B. H. Morris). Surely no such fee ought to be charged where it is not the unhappy victim's fault that he cannot be traced, but rather the ineffectual methods of the General Medical Council's officers. Of course, if it is necessary to do this to raise sufficient revenue for the Council's purposes it is of no use protesting.—I am, etc.,

October 20th. YOUR ADELAIDE CORRESPONDENT.

RESEARCH IN GENERAL PRACTICE.

SIR,—In your note in the BRITISH MEDICAL JOURNAL of November 6th (p. 844) on "Research in general practice," you state that "the great mass of clinical work in this country is done by general practitioners." With this statement of fact we all agree; but later you sorrowfully remark that general practitioners "are not able to take advantage of the opportunities that offer themselves." It is with this latter statement that I find fault. Why are general practitioners unable to take advantage of their opportunities in clinical medicine and surgery?

The answer is the abominable "closed" hospital system that pertains in this erstwhile free country. Our patients are our patients till they develop some symptom or symptoms of interest which can only be elucidated in an institution with further investigation—radiological or biochemical—and once the hospital swallows them up, their family doctor, who is conversant with the early symptoms and maybe with the patient's previous illnesses as well, is generally ignored. His notes of the case are never asked for, and if the patient himself ventures to suggest that Dr. X treated him for such and such a disease, he is sternly requested to forget all that!

Anyone who has done the work of a medical referee under the National Health Insurance Act will agree with me that the "history" of the case, as supplied by the patient's own doctor, is of immense value in helping to arrive at a correct diagnosis; and if this is so in panel practice, why not in general practice?

If followed out intelligently and sympathetically it certainly should be all to the patient's good and help the science of medicine. At present there is not that liaison between the family attendant and the hospital specialist that is so desirable if good results are to be attained. With the present system our patient goes into hospital and thereupon disappears from our ken, to come back weeks or months later with a garbled account of what was found the matter, or, maybe, an obituary notice in the local press leaves us wondering! In other cases, if an operation is required it is the exception for the family doctor to be informed as to when it is to take place. You further say, "The doctor in populous districts will have to train himself to be much more of a specialist than he is at present." How is he to train himself, cut off as he is from direct access to all the more modern methods of investigation, and unable to command the help of laboratory facilities? Your suggestion

early and more amenable cases. If, however, he meant "the general experience of London dermatologists" I am quite ready to accept his statement—for what it is worth!

As a joint meeting of the Dermatological, Therapeutical, and Tropical Diseases Sections of the Royal Society of Medicine has already been arranged, at the request of the dermatologists themselves, for 5.30 p.m. on February 2nd, I suggest that it may be well for the medical profession to suspend judgement until a full report is available of what should prove a very interesting occasion.—I am, etc.,

London, W.1, Dec. 8th. LEONARD ROGERS.

SIR,—While Dr. Graham Little is to be criticized for having omitted the word "apparent" before "cure" in his communication on the case of acute nodular leprosy, those of us who have lepers under our care should be grateful to him for bringing to our notice a new method of treatment.

The letter of Drs. Low, MacLeod, Manson-Bahr, and Sequeira, on the other hand, contains no useful information at all, and it would be interesting to know if any of these gentlemen have given this vaccine treatment a trial before making these discouraging remarks. Personally, I have already used Dr. Hasson's vaccine on a very advanced case of leprosy, which, for many other reasons too, had been given a hopeless prognosis. I am glad to be able to say that, although I have not achieved a cure in four weeks, I have had results which have been very encouraging, not only to myself, but also to the patient and her friends.

The extravagant claims for chaulmoogra oil by men "with long and close experience in the disease" were made in face of much evidence that, in this country at least, the drug has proved useless. Regarding the possible disappointment experienced by lepers who have happened to read the BRITISH MEDICAL JOURNAL, I would suggest that no patient nowadays of average intelligence expects his doctor to cure him, but he does expect that he will do his best, and at least prefers enthusiasm to despair.—I am, etc.,

Brighton, Dec. 13th. J. H. T. DAVIES.

SIR,—May I answer my friendly critics very briefly?

I used the word "cured" upon the analogy of general experience in tuberculosis, to which leprosy is in so many respects similar. If a case of pulmonary phthisis loses under treatment all physical signs of the disease, and also all evidence of the presence of bacilli, the patient is currently regarded as cured, and for practical purposes he usually is. The salient features of the case I reported are, I submit: (1) The conversion of an apparently moribund man into a person who would pass anywhere as being in normal health; (2)—and most significant—the complete elimination of bacilli in blisters produced upon the site of lesions, a feature which is of radical importance, as bacilli are so readily demonstrated in leprosy as compared with tuberculosis; (3) the complete disappearance of clinical symptoms such as cutaneous manifestations, thickening of nerves, and alteration of sensation. I naturally emphasized the dermatological aspects of the case, which bring it into my province of practice; and I may have been influenced by the remarkable change in this respect to take a too optimistic view of the possible future developments. To meet criticism, I am prepared to qualify the word "cured" with the addition "as far as clinical and bacteriological evidence goes."

With regard to the second point made by my critics, the duration of the disease: The history which I gave seemed very definitely to date the onset with acute neuritis some weeks prior to the appearance of the rash. The incubation period of leprosy is known to be very uncertain. Norman Walker has reported a case in which there was evidence for a latent period of some forty years, and I have recorded leprosy in a German lady who developed the disease in England nearly thirty years after she had left a country where it was endemic, and where she had lived as the wife of an English engineer for eleven years.

My description of the case now under consideration claimed no more than the fact that clinical symptoms seemed to date its perceptible onset at a time when the patient was residing in England, but did not exclude a much longer latent period, the estimation of which is largely guesswork, in which I do not propose to follow my critics.

It happens that, as I write, I have before me a letter from a provincial dermatologist, received within the last few days, giving results of a case treated with the same vaccine as that mentioned in my paper subsequently to the exhibition of my patient last October. In this new case, after a comparatively very short period of injections, the disappearance of clinical lesions was as swift and complete as in the case reported by me. Doubtless the method will be extensively tested, but so far as my—of course, very small—experience goes, I do not recall any other means of treatment which has shown such astonishingly rapid amelioration, as evidenced by bacteriological as well as clinical tests. Perhaps I may emphasize the fact that the method which I praise is not my discovery, nor have I taken any credit for it, so that my enthusiasm is entirely disinterested.—I am, etc.,

London, W.1, Dec. 10th. E. GRAHAM LITTLE.

THE PUBLIC, THE DOCTOR, AND THE MASSEUSE.

SIR,—Dr. G. Murray Levick's letter (December 11th, p. 1142) is most opportune. The increasingly important part in medical practice which diathermy and actinotherapy are destined to play will be generally acknowledged. It is therefore of supreme importance that these valuable remedial agents are not carelessly allowed to pass into unqualified hands. The remedy, which rests almost entirely with the medical profession itself, is, however, very simple.

In such conditions as early rheumatoid arthritis, Parkinsonism following encephalitis lethargica, neuritis, hay fever, and dysmenorrhoea (to mention only a few conditions at random), when medicinal treatment alone has been disappointing doctors should avoid telling the sufferer that nothing more can be done; this advice generally results in the patient rushing to the nearest unqualified practitioner. In suitable cases it is the bounden duty of medical men to advise their patients to have appropriate physical treatment.

When some doctors do advise the administration of diathermy or ultra-violet radiotherapy they often shortsightedly send their patients to the unqualified for treatment. These naturally, through lack of competent knowledge, generally obtain inferior results, and if a disaster, such as those described by Dr. Levick, should occur, it is often the doctor who sent the patient to the masseuse who incurs the brunt of the blame.

Rash suggestions like those recently made by an eloquent lecturer, not, however, in practice himself, advocating the universal installation of ultra-violet lamps in the home, are greatly to be deprecated, as they directly encourage the indiscriminate exploitation of physiotherapy by the unqualified.—I am, etc.,

Newcastle-on-Tyne, Dec. 12th W. KERR RUSSELL.

THE INFECTIVITY OF ERYTHEMA NODOSUM.

SIR,—Dr. Robinson's account in the JOURNAL of December 4th (p. 1049) of three cases of erythema nodosum occurring in close succession in three members of the same family living in the same house raises the interesting question of infectivity. Though the records are scanty, observers in this country, in other parts of Europe, and in America have recorded multiple cases in the same family and also small localized outbreaks in institutions, schools, and districts. In the JOURNAL for 1921 (vol. ii, p. 741) J. O. Symes of Bristol suggests that erythema nodosum is an acute specific fever. The evidence for this view is not convincing, and there is no proof that the disease produces immunity. Second attacks and relapses are known to occur. E. S. Stubbs had a patient with five attacks and another with three.

It would appear that erythema nodosum develops in the course of septic and bacillary infections. In moderate cases

Miss Adendorff of Kimberley, and remained in Johannesburg until 1906. He then returned to England, and settled down at Bath, but after four years he migrated to Canada, and took up farming on a large scale in Alberta. In 1921 he again returned to England, and engaged in practice at Irchester, where he was very much beloved and respected by all who came in contact with him. He was a Fellow of the Geographical Society, a member of the British Medical Association, and had just attained the office of president of the Wellingborough Medical Society when he died. He leaves a widow, one son, and two daughters, with whom sincere sympathy is felt.

Dr. SAMUEL CLARKE NOBLE, who died on December 2nd, was probably the oldest medical practitioner in Westmorland. He belonged to a family connected with the medical profession in Westmorland for three generations, and was the son of Dr. James Noble of Kendal. He was born in June, 1837, and received his education at the Kendal Grammar School, Christ's Hospital, and the Middlesex Hospital. He took the diplomas of M.R.C.S.Eng. and L.S.A. in 1859. He carried on his father's practice till 1889, with the exception of some seven years, when he temporarily retired through ill health. Upon the restoration of his health he resumed practice till his final retirement in 1899. Dr. Noble was one of the first members of the staff of the Kendal Hospital, now the Westmorland County Hospital, and was for some years surgeon to the Kendal Prison. He was surgeon major of the 2nd Border Regiment (Volunteers), and during the great war, although nearly 80 years of age, he undertook without remuneration the medical examination of all military recruits in Westmorland. He was a justice of the peace and deputy lieutenant of the county of Westmorland, and a member of the Kendal Division of the British Medical Association.

The following well known foreign medical men have recently died: Professor LUIGI LUCATELLO, rector of the University and director of the medical clinic at Padua; Professor LEO VON LIEBERMANN, professor of hygiene at Budapest; Dr. VIDAL of Hyères, member of the Académie de Médecine and a writer on climatology and infant welfare; Professor BABES, professor of pathology in the Bucarest Faculty of Medicine and director of the antirabic institute of Rumania; Professor LE DENTU, honorary professor of surgery at the Paris Faculty of Medicine and member of the Académie de Médecine, aged 85; Dr. CORNELIS DE MOOY, formerly lieutenant-general of the Dutch army medical corps, and inventor of a suture needle and automatic dismountable trephine, aged 72; and Professor H. FRANZ, a Berlin gynaecologist.

Medico-Legal.

PROCEEDINGS UNDER AN ACT NOT YET IN FORCE.

THE Court of Criminal Appeal (consisting of the Lord Chief Justice, with Salter and Talbot, JJ.) on December 14th allowed the appeal of John Kynaston, retired Lieutenant-Colonel R.A.M.C., against his conviction at the Old Bailey of aiding, abetting, and procuring Rowland Pawsey, whom he was treating for catarrh, to obtain powdered opium, contrary to the Dangerous Drugs Act, 1925, on the ground that a section of that Act provided that it should "come into operation on such date as his Majesty may by Order in Council appoint," and as there had been no such Order the Act had not come into force.

The accused first appeared at the Marlborough Street Police Court on two charges, the second charge being that of falsely describing himself as a recognized licentiate in medicine and surgery by the use of the descriptions "M.R.C.S., L.R.C.P.Lond.," contrary to the Medical Act, 1858, and the stipendiary magistrate adjourned the case on this charge *sine die*, committing him for trial at the Old Bailey on the first charge under the Dangerous Drugs Act. At the Old Bailey the jury, on the direction of the Common Serjeant, found the accused guilty, and a nominal fine of £10 was imposed.

The proceedings at the Marlborough Street Police Court and at the Old Bailey were reported in the BRITISH MEDICAL JOURNAL of October 16th (p. 716) and of November 20th (p. 964).

The appellant, who appeared in person, complained that the prosecution arose as a result of the wrongful removal of his name from the *Medical Register* by order of the General Medical Council for advertising in 1922—"an offence which has been copied by a number of distinguished men much more than I have ever done."

The Lord Chief Justice said that the point that the appellant's name ought still to be on the *Medical Register* was not open to him. The case started with the fact that he was an unregistered medical man.

The appellant said it was a disgrace for anyone to have a conviction under this Act recorded against him. It was particularly important for him, not only because he was a member of the medical profession in the ordinary acceptance of the term, but also because the Secretary of State had power, on a conviction under the Act, to take away a right he still had to keep a shop and sell medicines and poisons under the Pharmacy Act, 1868. There was nothing in the Dangerous Drugs Acts to prevent an unregistered medical practitioner from properly carrying on his ordinary practice. The object of the Acts was to prevent the improper use of the drugs which came within their regulations. When Section 34 of the Medical Act, 1858, provided that words in any Act of Parliament which imported persons recognized by law as medical practitioners should be construed to mean registered medical practitioners, it was not apprehended that the General Medical Council would assume powers to which it was not entitled.

An Appeal with no Real Merits.

Mr. H. D. Roome (who appeared for the Director of Public Prosecutions) here intimated to the court that it had only just been brought to his attention that the Dangerous Drugs Act, 1925, under which all the proceedings had progressed, had never been brought into operation by Order in Council, as it had to be.

The Lord Chief Justice: If you had known that this pleasant method of legislation by a hypothetical and contingent Order in Council had been adopted, your conduct of the case would have been somewhat different.

His Lordship, giving the judgement of the court, said the appeal had no real merits, but they were compelled to quash the conviction. By one of those devices referred to in that phrase of Hallam's, which told them that they must "venerate what we cannot presently comprehend in the British Constitution," the Dangerous Drugs Act, 1925, by Section 7, Sub-section 3, provided that the Act "shall come into operation on such date as his Majesty may by Order in Council appoint." There had been no Order in Council, and the Act had therefore not come into force. That prosecution was conducted on the assumption that it had. It thus resembled nothing so much as pulling a bell handle without a bell at the other end.

The appeal was allowed, as stated, and the conviction quashed.

The Services.

No. 14 STATIONARY HOSPITAL.

THE annual dinner of the No. 14 Stationary Hospital was held at the Trocadero Restaurant, London, on December 10th. Lieut.-Colonel J. R. Harper, C.B.E., who was in the chair, contributed numerous reminiscences, and many of those present added others. The pleasure of the evening was considerably enhanced by fuller information than usual being available about the present activities of officers who had been on the hospital staff, and in this connexion special thanks were extended to Dr. H. L. Tidy, the organizer of the dinner.

DEATHS IN THE SERVICES.

Colonel Edmund John Erskine Risk, A.M.S., who died on December 7th, aged 68, received his medical education at St. Bartholomew's Hospital, where he won two scholarships and distinguished himself in rowing. In 1880 he obtained the diplomas M.R.C.S.Eng. and the L.R.C.P. and L.M.Edin. He joined the Army Medical Service in the following year, and served throughout the Egyptian campaign, being present at the battle of Tel-el-Kebir. He was then sent to India, but in 1891 was invalided home with dysentery and malaria; subsequently he served in the Aldershot Command for three years, and in the West Indies for nearly six years. During the Boer war he was in charge of the surgical division at Elandsfontein. After a period of service at Southampton and in Ireland he became senior medical officer at Bultfontein, Orange River Colony; in 1910 he was appointed assistant medical officer to the Northern Command in Ireland, and in the following January commandant and director of studies of the R.A.M. College, Millbank; at the end of the following year his health failed, and in 1913 he retired. He received the medal for Egypt, 1882; the Khedive's star, 1882; and the Victoria medal for the South African war. At his funeral on December 11th the War Office and the Director-General, R.A.M.C., were represented. He leaves a widow and one daughter.

Lieut.-Colonel Robert Alexander Chambers, O.B.E., Indian Medical Service, died of pneumonia at Lahore on November 8th. He was born on October 1st, 1881, and was educated at Edinburgh, where he graduated M.B. and Ch.B., with second class honours, in 1904. He entered the I.M.S as lieutenant in September, 1906, and became lieutenant-colonel on March 1st, 1926. Most of his service had been spent in civil employ in the Punjab, where he was for some years civil surgeon of Amritsar, and principal of the medical

of recourse to post-graduate instruction does not fill the bill, since what the general practitioner wants is not instruction but the help of modern methods of investigating disease and the opportunity of watching his patients, either alone or with the help and guidance of the hospital specialist.

And as to the teaching hospitals, they are of the least use to the general practitioner; they take his fees when a student and teach him nothing in return, at least in midwifery, if we are to believe some of our professors in midwifery, and they should know they did their worst on him.

And now, Sir, you want to send us back to the scene of our misfortunes, where we shall be reinstructed in the importance of sending all our patients to the hospital specialist! May I suggest that the British Medical Association turn its attention to serious consideration of this matter and agitate for the freedom of all hospitals to every man or woman on the *Medical Register*, instead of, as at present, bolstering up an effete system of hospital monopoly for the few?—I am, etc.,

VINCENT P. NORMAN, M.D.,
F.R.C.S.Ed.

Bradford, Nov. 14th.

CARCINOMA OF THE TONGUE.

SIR,—In the lengthy discussion on carcinoma of the tongue, published in your current issue, there is some talk about sepsis but not much about its prevention. This recalls to my memory that over a quarter of a century ago a distinguished surgical colleague of mine had several deaths in rapid succession from septic pneumonia after removal of the tongue. I suggested that I should prefer being called in before the operation rather than after. I advised that in future cases the patient should have large doses of calcium chloride for the preceding week and an injection of 10 c.cm. of antistreptococcal serum on each of the three days before the operation. Any good antiseptic mouth-wash should be freely used, and for this purpose pure unadulterated whisky, as recommended by Jonathan Hutchinson, was as good as anything else; moreover, if the patient did swallow a little of it there was no danger of poisoning. The operations went on as usual, but there was no more pneumonia.—I am etc.,

JAMES BARR.

London, S.W.1, Dec. 11th.

Obituary.

C. B. ROSCROW, L.R.C.P., L.R.C.S.Ed., L.R.F.P.S.Glas.,

Late Medical Superintendent, City Mental Hospital, Winson Green, Birmingham.

WE regret to record the death of Dr. Cecil Beaumont Roscrow, in a nursing home in Sutton, Surrey, on December 8th, at the age of 56. Dr. Roscrow received his medical education at Edinburgh University, and obtained the diplomas L.R.C.P., L.R.C.S.Ed., L.R.F.P.S.Glas. in 1894. After acting as assistant in general practice to Dr. A. Houldsworth Davis in Sunderland, doing similar work in London, and serving as ship surgeon, he went to the City of Birmingham Mental Hospital at Winson Green as senior assistant medical officer. At the end of eight years' service there under the late Dr. E. B. Whitcombe he succeeded him as medical superintendent, and, as recently as June of this year, retired on pension after twenty-three years' service, and went to live at Sutton with his two sisters.

He had for the last five or six years suffered from diabetes, and this illness influenced him in retiring so soon after he became eligible to do so. A week before he died he developed what appeared to be a large carbuncle in the neck, but this proved to be more extensive than at first thought (involving the spine) and despite two operations he passed away.

Dr. Roscrow was a man of strong character, exceedingly well read and practised in his profession, and extremely conscientious. He had an intense dislike of publicity, and two years ago when persuaded by his chairman to allow certain press representatives to see over the hospital and "write up" what the hospital was doing in the treatment of general paralysis by malaria, etc., he did so only with great reluctance and on condition that the names of the officers should be kept out. It was characteristic of him, too, that, when the late Dr. Whitcombe died, he made no movement to secure the position to which he was afterwards appointed. He continued the Winson Green tradition of homeliness, and it was always his proud boast that he knew each of his 800 patients by name. He had a ready wit, and this carried him through very often when dealing with an "awkward" patient. He was strict in the supervision of his staff (especially if patients were concerned), but he had the inestimable gift of being able to turn a blind eye to many little delinquencies when he judged that was the proper course. As a result he was loved and very highly respected by his staff and by the patients, who felt they had one they could confide in. He was never very keen on games (although earlier he had played in the hospital cricket team), but he loved to study astronomy, geology, and architecture. Many of his old colleagues will remember his "two in the morning" lectures on the heavens. Although he had travelled abroad a good deal, he became interested, after the war, in the various architectural features of this country, and he motored all over England in his search for architectural knowledge. At Winson Green he greatly increased the giving of "parole" to patients, the sending out on trial of patients, and the payment of money allowances to those out on trial. He made Winson Green one of the earliest of mental hospitals to introduce the "improved breakfast." Other improvements, such as cinema, mechanical spreaders, mixers and so on, were added as soon as brought to his notice.

He was lecturer in mental diseases (clinical) in the University of Birmingham, and a member of the British Medical Association and the Royal Medico-Psychological Association; only last year he was photographed with nearly 70 per cent. of his nursing staff, all of whom had gained the certificate of the Royal Medico-Psychological Association. Dr. Roscrow never married, and he used to quote the late Lord Kitchener in support of his contention that the married man's interest in his work was subordinate to his interest in his home. At any rate he himself made his hospital his whole interest, and it is extremely sad that one who thoroughly deserved a well earned retirement should have been so soon cut off. When he retired last June he was the recipient of many gifts from committee, staff, and patients, and at his funeral on December 10th many representatives from the hospital went to pay a last tribute to his memory.

G. E. S.

DR. HERBERT DAVID CROOK of Irchester, Northamptonshire, who died suddenly on November 15th, while returning from a visit to a patient, received his medical training at Bristol and Leeds. In 1877 he obtained the diplomas M.R.C.S.Eng. and L.R.C.P.Ed. For some time he held an appointment in Leeds, but on the outbreak of the Russo-Turkish war he joined the Turkish army, and during this campaign saw much active service. Towards the end of it he gave valuable assistance during the small-pox outbreak in Constantinople. On the termination of hostilities he went to South Africa, and was attached to a big-game hunting party for about two years. This expedition carried him well north of the present Rhodesia; during part of it he became acquainted with Selcus, in one of whose books he is mentioned. He then settled down in Kimberley, and for many years practised there. While in Kimberley he was medical adviser to some of the large diamond mines, and from time to time took an active part in digging. At this time he was intimate with Dr. Jameson, in whose biography he is mentioned. He went from Kimberley in 1899 to Salisbury in Rhodesia, but had only been there a few months when the Boer war broke out. He immediately volunteered for service and came south, but being unable to get to Kimberley travelled by boat to Capetown. From there he was sent to Johannesburg and put in charge of a large concentration camp. While there, in 1901, he married

moved to extend the provision to franchise coroners, but Captain Hacking said the clause applied to franchise coroners. Mr. Lee moved that notice of intention to hold a *post-mortem* examination should be given to the trade union representative of the deceased, and that the union should have the right to be represented at the examination by a qualified medical man. He said that there was a prevailing idea among the families of men who died as the result of accidents that the medical man appointed by the coroner was in some way hostile to their interests. He knew from experience that there was not much ground for that suspicion. There was no difficulty with regard to the coroner knowing who was the trade union representative.

Dr. Fremantle said the medical profession was always glad to have other medical evidence brought in to assure suspicious minds among the lay public that the medical men had done their best and had been accurate. The family ought to be represented, and could, if necessary, notify a trade union representative. Mr. Cape said he thought the intention of the amendment was that the family doctor should be brought to attend the examination. Sir Richard Luce sympathized with the principle of the amendment, but saw considerable difficulties. Employers would also wish to be represented, and most places where *post-mortem* examinations were conducted were not suitable for a large number of persons. Mr. Batey said trade unionists agreed that, while the trade unions should have the right to appoint a medical man, which was essential for compensation purposes, the employer's doctor should be there too. Captain Hacking agreed with this last contention, but said the matter ought to be for the discretion of the coroner. It had been shown that in practice the trade union was notified, and a medical officer appointed by them with the consent of the relatives, as well as the doctor representing the employer's organization. There appeared to be no necessity for putting this into the bill and making it a hard and fast rule. The Home Secretary had power to make rules through the Lord Chancellor. Mr. C. Edwards said he had been a miners' agent in a district where there were two coroners. One in every case informed him; the other refused to give information of inquests. The amendment was rejected by 16 to 10.

Mr. Lee proposed that at the inquest the trade union might call and examine the medical practitioner who had attended the examination on its behalf. Captain Hacking suggested that the committee should have a little more confidence in coroners, and asked to be told of a case where a medical man had attended a coroner's court and had not been called to give evidence. Mr. Cape said medical men had dignity, and would not attend to see whether the coroner would allow them to give evidence. Captain Hacking said that if in practice evidence were not admitted the Home Secretary would cause an inquiry to be made. The amendment was defeated. Discussion was resumed on December 8th. On the proposal that "where a person states upon oath before the coroner that in his belief the death of the deceased was caused partly or entirely by the improper or negligent treatment of a medical practitioner or other person, that medical practitioner or other person shall not be allowed to perform or assist at any *post-mortem* or special examination made for the purposes of the inquest on the deceased." Mr. Smithers moved to make the statement on oath unnecessary and allow the coroner so to act on information received. Captain Hacking said the bill afforded a better procedure in these rare cases. The coroner could request any legally qualified practitioner to make examinations. The oath could be taken before any justice or commissioner, or before the coroner. If it were placed at the discretion of the coroner to say that a certain doctor should be prohibited from performing a *post-mortem* examination, it would be casting a very obvious slur on certain members of the medical profession before any inquiry had been carried out. A person making an accusation against a medical practitioner in the coroner's court would be privileged. The amendment was withdrawn. Sir Richard Luce moved that the medical practitioner to whom objection had been taken should have the right to be present or represented at the examination. He said he had known of no case where a coroner had refused this. The provision that the medical man should not assist or direct at the *post-mortem* examination was put in on account of a case in which a medical man was suspected of murder by poison. He jogged the elbow of the man who was performing the *post-mortem* examination and upset the contents of the stomach so that they could not be examined afterwards. On an appeal by Mr. Rhys Davies, Captain Hacking offered to add the words "but such medical practitioner or other person shall have the right, if he so desires, to be represented at any such *port-mortem* examination." Sir Richard Luce said there might be chemical tests of great importance which a representative should have a right to attend. Captain Hacking said the special examination might last many days, and an analytical test might easily be upset by anyone who desired to do so. If the coroner thought that the medical man impugned should be present he could still attend. Sir Richard Luce withdrew his amendment. On the clause relating to the fees of medical witnesses, Captain Hacking moved that for attendance at any inquest at which no *post-mortem* examination had been made by a practitioner the fee to that practitioner should be one and a half guineas for each day he was required to attend, in place of the inclusive fee of a guinea proposed in the bill. Captain Hacking said he would later suggest a two-guinea fee for a *post-mortem* examination. He thought these fees reasonable. Mr. Cape, while criticizing the proposal, admitted that one guinea was too small a fee for a *post-mortem* examination. Mr. Lee thought it unfair that the medical man who had to travel miles to attend should be paid the same fee as the doctor on the spot. Dr. Fremantle said few doctors were on the spot, and in many cases a whole morning or a whole day of the doctor's time was occupied. The doctor's fees had not been increased since 1844. Mr. R. Davies asked whether the Government had considered that where the inquest was on a panel patient the doctor would already be paid to the end of the quarter under the National Health Insurance Act. The amendment was accepted by 18 to 2. Captain Hacking then moved that the fee for a *post-mortem* examination without subsequent attendance at the inquest should be two guineas. Sir Richard Luce moved a further amendment to make the fee three guineas; he said that one guinea was a disgraceful fee for performing so important and even dangerous a duty. He supported his view with a quotation from the Departmental Committee of 1909-10. The figure of two guineas was accepted by the Committee. The Committee then agreed that for a *post-mortem* examination followed by attendance at an inquest, the fee should be three guineas for the first day of attendance, and one and a half guineas for each subsequent day on which the medical practitioner is required to attend.

Mr. Rhys Davies asked the Labour members of the Committee to divide against this clause to protest against the way the Government had succumbed to the medical profession. Captain Hacking denied the implication of pressure, and said that the Home Office considered the present fees too small. The clause was added to the bill by 14 to 6. A new clause providing for superannuation on pension of county and borough coroners was added to the bill an amendment to make the pensions contributory being negatived. On a new clause dealing with payments and allowances Sir Richard Luce moved an amendment to provide that medical men should have allowances for distant journeys. Captain Hacking said the legality of paying such allowances had never been challenged. In case of difficulty appeal could be made to the Home Secretary. The amendment was withdrawn. Other proposed new clauses were withdrawn and the bill was reported to the House.

The Report stage of the Coroners (Amendment) Bill was taken on December 13th. Mr. Gates moved a new clause on behalf of the London County Council, providing that whole-time coroners appointed after the passage of the Act should make contributions towards their pensions at the rate of 5 per cent. of their salaries, and that they should be paid pensions calculated according to their length of service. The amendment, however, found no seconder and so fell through.

Mr. Paling moved to omit Clause 23, which provides for fees to medical witnesses who, at the request of a coroner, make a *post-mortem* examination or attend an inquest. Captain Hacking (Under Secretary for Home Affairs) said that the effect of the amendment would be that medical men would not get any fees at all.

Mr. Rhys Davies said that the amendment was put down as a protest against the manner in which the increase of fees had been made in committee. He asked if there were not some communications between the Home Office and the British Medical Association in the first instance as regarded the amount of fees to be inserted in the bill. Dr. Fremantle denied that there had been any machinations between the Government and the British Medical Association. He had personally come into the House of Commons untrammelled by any responsibility to the British Medical Association. He only supported an increase of medical fees in so far as he thought that it could be justified by the needs of the case from the point of view of the State. In this instance he and others had had a very hard job to convince the representative of the Home Office of the necessity and right of their cause.

Dr. Vernon Davies protested against the attack made on the medical profession by the mover of the amendment. It was entirely unnecessary to make a comparison between doctors and miners. Speeches of that nature were apt to give a very wrong impression. Anything which endangered the good feeling between medical men and their patients was detrimental. If a guinea was a fair fee in 1844, surely at this time there should be some increase. There was a tendency in the Labour party to belittle the medical profession, and the harm that this might do in the country might be very great.

The amendment was negatived.

The Report stage was concluded. On the motion for the third reading Mr. Rhys Davies said that the Labour party had a very high regard for the medical profession.

In reply to questions, Captain Hacking said that the Home Secretary would direct coroners to allow trade union representatives to attend inquests and to allow medical men representing relatives to be present at *post-mortem* examinations.

The third reading was agreed to.

In the House of Lords, on December 14th, the Commons amendments to the Coroners Bill were accepted.

Acute Poliomyelitis.—The Minister of Health is advised that the claim made in America that the virus of acute poliomyelitis had been found in the dust of sickrooms has not been confirmed, and that there is no direct evidence that it is transmitted by uncooked food.

Vaccination and Poliomyelitis.—On December 10th Mr. Groves asked the Minister of Health why no mention of vaccination was made on the death certificate of the young man of 19, whose name had been privately given to his department, who recently died from acute anterior poliomyelitis fourteen days after vaccination. Mr. N. Chamberlain said the certification of the cause of death rested entirely with the medical practitioner in attendance. Inquiries had, however, been made into the circumstances of the death in question, and he learnt that vaccination was not entered on the death certificate because in the opinion of the certifying practitioner vaccination was not a primary, secondary, or contributory cause of death. In an answer apparently referring to

school at that station; from that post he had recently been transferred to the chair of medicine in Lahore Medical College. He served during the recent great war, in Mesopotamia in 1916 and in 1917-18, and on the North-West frontier in Waziristan in 1917, was mentioned in dispatches in the *London Gazette* of April 13th, 1919, and of January 12th, 1920, and received the O.B.E. on January 1st, 1919.

Brigade Surgeon Lieut.-Colonel Henry James Hazlett, Madras Medical Service (ret.), died in a nursing home at Bournemouth on November 6th, aged 86. He was born at Lurgan, Armagh, and was educated in Dublin, where he took the L.R.C.S.I. and L.K.Q.C.P. in 1866. He entered the I.M.S. as assistant surgeon on April 1st, 1867, became brigade surgeon in March, 1891, and retired in 1897.

Major James Harran, R.A.M.C. (ret.), died in London on October 14th. He was born in Dublin in 1853, and educated at Charing Cross Hospital, where he was medallist in surgery in 1876; he took the L.S.A. in 1877, and the L.R.C.P. and S.Edin. in 1880. He entered the army as surgeon on July 31st, 1880, became surgeon major after twelve years' service, and retired in 1901. After his retirement he lived for some years at Portsmouth.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

IN view of lack of time and threatened opposition, the Government has decided to drop the Mental Deficiency Bill for this session. It passed the House of Lords, was read a second time in the Commons without opposition, and passed through a Committee of the Commons in one day. On December 13th, however, the Prime Minister stated that there seemed little prospect of the measure going through now because so many amendments had been put down. If they were withdrawn he would see what could be done, but otherwise there would be no time. Inquiry showed the Government that the opponents of the bill would not be conciliated. On the Opposition side objection was taken on the ground that it interfered with the liberty of the subject. Conservatives feared that expense would be incurred, and some of the medical members of Parliament were not satisfied with the proposed definition of mental deficiency. The dropping of the bill leaves local authorities powerless to provide for cases of mental deficiency following encephalitis lethargica if the patient is over 16 years of age. There is doubt whether the Ministry of Health will be able to introduce a similar bill next session, as that department is already claiming a large share of the legislative programme.

The Parliamentary Medical Committee has given consideration to the possible business of Parliament in 1927. It looks forward to a bill relating to the Poor Law and local government, and to action on the Royal Commission reports on lunacy and on National Health Insurance. It expressed its satisfaction with the Parliamentary Notes in the BRITISH MEDICAL JOURNAL as a summary of business of medical interest transacted in the House of Commons. From other sources it is learnt that the Government has little hope of passing a Lunacy Bill next session.

The University of London Bill was read a third time by the House of Commons on December 7th, and returned with amendments to the House of Lords. The amendments were considered and agreed to on December 13th, and the Births and Deaths Registration Bill was read a third time and passed by the House of Lords on the same day.

Parliament was prorogued on December 15th, the session of 1926 being thus ended. Bills which then awaited the Royal Assent included Merchandise Marks, Electricity, University of London, Births and Deaths Registration, Housing (Rural Workers), Coroners (Amendment), Lead Paint (Protection against Poisoning), Workmen's Compensation (No. 2), and Public Health (Smoke Abatement).

The session of 1927 will probably commence on February 8th.

Coroners Bill.

A Standing Committee of the House of Commons commenced the examination of the Coroners Bill on December 7th. Mr. Rhys Davies moved an amendment to provide that coroners should have both a medical and a legal qualification; this had been the practice in London for some years, and he could not understand why a single qualification should suffice in towns like Manchester, Liverpool, or Leeds. He did not think the medical qualification alone was quite sufficient for these posts, and he was sure a legal one was insufficient. Captain Hacking (Under Secretary for the Home Office), who was in charge of the bill, said the number of coroners in London was small compared with the number throughout the country—about 300 in all. The choice would be most restricted by insistence on a dual qualification. Large towns could impose that dual qualification as a condition of appointment if they desired. The amendment was negatived. The clause abolishing franchise coronerships was accepted, as was that relating to the salaries of county and borough coroners, a provision being added that in default of agreement between a borough coroner and the council his salary should be payable at a rate fixed by the Home Secretary. Captain Hacking announced that the Duchy of Lancaster was going to surrender all its franchise coronerships, and that there would soon be none. On the question of summoning a jury in inquests arising out of industrial and traffic accidents and in other stated circumstances, Mr. Lee moved that the word "shall" should be substituted for "may." Captain Hacking said the coroner could always evade the word "shall." Mr. Batey said that in the North of England in cases of fatalities at the pits the men's societies had found it much better to deal with a jury than with a coroner. They might find the coroner absolutely ignorant of pit work. The amendment was withdrawn. On Clause 14, covering the viewing of the body and the issue of a burial order, the wording of a subsection was altered to read:

"Subject to the provisions of any rules made under this Act an order of a coroner authorizing the burial of a body upon which he has decided to hold an inquest may be issued at any time after he has viewed the body."

The clause must work in connexion with the Births and Deaths Registration Bill, and the Home Office thought it should have an opportunity of issuing regulations and rules, rather than lay down something in this bill which might prove unworkable when the other bill became an Act. The Lord Chancellor would make the rules, which would be simple.

On a subsequent clause, Mr. Lee moved that the coroner within whose jurisdiction the accident happened should hold the inquest, and if he deemed it expedient should keep the bodies within that jurisdiction pending the inquest. Mr. Batey said the practice in the North of England for a hundred years had been to take the body of a man killed in a pit straight home, but last year a coroner had refused permission. Captain Hacking said that in many cases it was advantageous that the inquest should not necessarily be held at the place where the accident happened. Several people might be badly injured in a colliery accident, and might be taken to the nearest town where there was a hospital, and if they died there it would not be advisable to remove the bodies to another district to hold the inquest. It might be for the convenience of everyone that the inquest should be held at the place where the bodies were. It would be better that the bodies, if necessary, should be collected together and the inquest held in one place, to save the expense of the coroner and witnesses going from one place to another. The amendment was rejected.

On the clause allowing a coroner to order a *post-mortem* examination in a case where he thought that might show that an inquest might be unnecessary, Sir Richard Luce moved to insert words providing that the coroner should also have power to call for a report from a duly qualified medical practitioner recently in attendance on the deceased if of opinion that this might render an inquest unnecessary. This principle already existed in Scotland, where the Procurator Fiscal obtained a formal written report from the medical practitioner in attendance. A departmental committee had recommended, in 1909, that this feature of the Scottish system should be adopted in England. It was in operation in a coronership in Durham, had never been challenged by the courts, and, according to the coroner concerned, it had halved the number of inquests. Sir Richard Luce added that from personal experience he could say a large number of inquests were needless. Mr. Rhys Davies said the amendment would practically transfer the work of the coroner to the medical practitioner, but he agreed that the certificate of the medical practitioner would be very important in most cases. Dr. Fremantle said the amendment would regularize a practice that had existed. The doctor would simply give the coroner a preliminary report on which he could make up his mind. Captain Hacking said the coroner must accept full responsibility, and could not delegate it to anyone else. It was open at present for the local authority to undertake any reasonable and necessary expenditure in obtaining a report from a doctor. The Durham County Council allowed 10s. 6d. for a report, and there was no reason to believe this was illegal. The doctors, instead of asking for legislation to impose such a fee, should get local authorities to exercise their existing power to provide in schedules for such a fee. Later the backward authorities could be brought into line by the Home Secretary. Mr. Batey supported the amendment as an agent of the Durham Miners' Association, saying that in Durham, where the practice of accepting reports prevailed, there had not been a single complaint. Sir Richard Luce put the case of a patient suffering from heart disease who died suddenly without having seen the doctor for a few weeks. The coroner almost invariably held an inquest, and the doctor was not allowed to give a certificate of the cause of death. At the same time the doctor knew all about the patient, and could give the coroner full information in writing, if asked, which would avoid the need for an inquest. The amendment was defeated by 21 to 7.

On the provision that the coroner might direct a legally qualified medical practitioner to make a report Mr. Smithers moved that this should be a written and signed report on oath. Captain Hacking said the principle of the amendment could be met by enjoining the medical man to report to the coroner in writing. The section was amended accordingly. Mr. Smithers moved another amendment, designed, he said, to ensure that there was nothing underhand in the *post-mortem* examination and that it was held subject to the coroner's orders. Captain Hacking gave an assurance and the amendment was withdrawn. On Clause 22, relating to the power of a coroner to request specially qualified persons to make *post-mortem* and special examinations, Mr. Gates

Lyon, Margaret B. MacDonald, N. W. MacKeith, Evelyn T. D. Maclagan, D. H. MacLeod, I. McPherson, Dorothy B. Marling, Mary A. Marshall, S. K. Montgomery, J. G. Morgan, Dorothy L. Neate, G. J. V. Nelken, G. A. H. Norman, H. L. O'dershaw, Catherine E. Orr-Ewing, Evelyn M. Pakeman, W. E. Parry, C. E. Pearsons, A. D. Pegg, G. E. G. Peirce, L. M. J. R. Pilot, I. Price, Henrietta Procter, Muriel F. Prout, D. M. Pryce, Bertine M. Rix, L. H. Savin, J. W. Schabort, J. A. Screech, E. C. Seward, Mary M. Sillito, A. S. Simpson, A. J. D. Smith, W. E. Snell, I. P. Spurrell, E. F. Stead, Edith A. Straker, S. V. Strong, D. E. Thomas, J. D. S. Thomas, O. G. Tippett, J. R. Tree, Betty C. Waters, Edith M. Webb, A. S. Wesson, Violet M. Weston, E. A. White, Doris Williams, Jane C. Williams, Emily A. C. Wilson, H. F. Wilson, J. T. Wybourn.

* Honours. † Distinguished in Medicine. ‡ Distinguished in Pathology. § Distinguished in Surgery. ‖ Distinguished in Midwifery.

The following students have passed in one of the two groups of subjects:

Group I.—D. E. Barton, Doris D. Brown, Isabella M. G. Butler, Irene F. Callender, T. E. Davies, A. E. de Chazal, Jean M. Dollar, J. Gabe, A. C. Hancock, Lynette Hemmant, Mary H. McC. Huggett, R. M. Jones, Eileen M. King, Miriam A. Lawson, W. Leslie, A. H. Levers, M. F. B. Lynch, Barbara H. Mitchell, Doris Reynolds, Sibyl D. Rodgers, E. S. Rudaizky, Margaret V. Saul, H. S. Townsend.

Group II.—W. A. Ball, A. L. Banks, R. E. Barrett, Hilda M. P. Bond, D. G. Bown, D. A. Brigg, Helen M. Browne, M. R. Burke, A. L. Canby, D. C. MacC. Ettles, J. Evans, Leonora S. Evans, B. W. Goldstone, D. P. Gray, H. F. Hiscocks, L. Holmes, J. G. Kingsbury, E. D. Lawrence, Joan L. Lush, A. C. MacLeod, C. W. Marshall, H. M. Mikhail, Anna P. Montgomery, R. T. Payne, Alice L. Robson, E. H. Roche, M. Sendak, K. S. Smith, J. E. Swyer, Mary C. Tugman, Mary M. Tulloch, J. S. Whitton, Beatrice A. Wilkinson, H. K. Williams, E. Wornum.

UNIVERSITY OF LIVERPOOL.

MAJOR W. SCOTT PATTON, I.M.S.(ret.), lecturer in medical entomology in the University of Edinburgh, has been appointed to the Dutton Memorial Chair of Entomology in the School of Tropical Medicine of the University of Liverpool, in succession to Professor Robert Newstead, F.R.S., retired.

UNIVERSITY OF ST. ANDREWS.

A MEETING of the University Court was held on December 3rd.

The court concurred with the University of Edinburgh in nominating Dr. R. W. Johnstone (Professor of Midwifery, University of Edinburgh) to be the representative of the two universities on the Central Council of the Midwives Board for Scotland, in succession to Professor Watson.

The appointment of Dr. Annie Fulton as an instructor in relation to the advanced medical school (in succession to Dr. Andrewina Laird) was agreed to.

Principal Mackay was reappointed the representative on the General Medical Council for five years from January 7th next.

UNIVERSITY OF DUBLIN.

AT the first winter commencements in Michaelmas term held in the theatre of Trinity College, on December 10th, the following degrees and licences in medicine were conferred:

M.D.—J. A. Acheson, M. Bewley, J. C. J. M'Entee.

M.B., B.Ch., B.A.O.—E. W. Bingham, A. J. Conlin, Gladys L. Craig, Margaret E. S. Deane-Oliver, Margaret H. Donaldson, E. P. N. M. Early, H. A. Ferguson, E. H. Harte, R. A. J. Holmes-Ievers, V. G. Horan, J. Johnston M. L. M'Cauley, E. G. Montgomery, A. E. A. O'Byrne, J. B. Patrick, Rachel E. Porter, J. Quigley, D. A. O'C. Quinlan, Stella C. Ross, A. Sachs, J. C. T. Sanctuary, Norah M. Smith, L. B. Somerville-Large, V. St. G. Vaughan, C. F. M. Wilson, Annette K. Wood-Martin.

LICENCE IN MEDICINE, SURGERY, AND OBSTETRICS.—A. N. B. Odbert.

NATIONAL UNIVERSITY OF IRELAND.

AT the meeting of the Senate on December 10th Dr. Alexander Anderson, D.Sc., LL.D., President of University College, Galway, was elected Vice-Chancellor and Dr. Denis J. Coffey, LL.D., M.B., President of University College, Dublin, was elected one of the three pro-Vice-Chancellors of the University. The Senate decided that the degree of D.Sc.(Public Health) should be awarded to William D. O'Kelly, M.D., D.P.H., University College, Dublin, upon published works lodged by him. A report from the outgoing Vice-Chancellor, Dr. Denis Coffey, as representative of the University on the General Medical Council was approved.

UNIVERSITY OF SYDNEY.

THE following appointments are announced by the Senate:

Professor of Psychiatry: William S. Dawson, M.A., M.D.Oxf., M.R.C.P.Lond., senior assistant, Maudsley Hospital, Denmark Hill, London, vice Professor Sir John Macpherson. *Lecturer in Pharmacy:* Mr. Horace Finnemore, B.Sc., F.I.C., F.C.S., of Guy's Hospital Medical School, London, vice Mr. S. H. Stroud, *Lecturer in Chemistry:* Dr. Thomas Iredale, of Armstrong College, Newcastle-on-Tyne, vice Associate Professor J. A. Schofield.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

AN ordinary Council meeting was held on December 9th, when the President, Sir Berkeley Moynihan, Bt., was in the chair.

Representation of Members.

The resolution carried at the annual meeting of Fellows and Members asking the Council to take a postal vote of Fellows and Members on the question of admitting Members to direct representation on the Council of the College was referred to a committee for consideration.

Court of Examiners.

Mr. E. Rock Carling, surgeon to the Westminster Hospital, Mr. A. E. Webb-Johnson, surgeon to the Middlesex Hospital, and Mr. C. Franklau, surgeon to St. George's Hospital, were elected members of the Court of Examiners.

Mr. C. H. Howkins, dental surgeon to the Birmingham Dental Hospital, was elected a member of the Board of Examiners in Dental Surgery.

Diplomas and Licences.

The report of the Court of Examiners stated that of the 101 candidates at the Fellowship Examination 70 were rejected and 31 passed. Diplomas of Fellowship were granted to the following 27 candidates; the other four successful candidates (R. A. Brews, C. I. N. Morgan, F. T. Ridley, and A. J. Wrigley) have not yet complied with the regulations.

J. S. Rowlands, P. B. Kittel, R. C. Brown, E. A. Coldrey, P. R. Hawe, S. I. Levy, A. L. P. Jeffery, N. Asherson, W. E. Barnie-Adshead, L. H. Savin, V. W. Dix, K. W. Heritage, M. F. Nicholls, A. C. King, K. O. Parsons, S. J. H. Griffiths, W. I. Daggett, G. D. Robb, P. Malpas, T. S. M. Barnett, A. J. C. Hamilton, C. W. Harris, P. Kiely, E. D'A. McCrea, F. A. MacLaughlin, J. M. D. Mitchell, I. G. Sacks.

Diplomas of membership were conferred upon A. C. Jepson, P. N. Lahiri, and L. A. Richardson.

Licences in Dental Surgery were conferred upon 83 candidates.

Appointment of Representatives.

Sir Berkeley Moynihan was reappointed a representative of the College on the Court of Governors of the University of Birmingham.

Mr. Victor Bonney was appointed a representative of the College on the Central Council for District Nursing in London.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

THE following have been admitted Fellows of the Faculty:

W. C. Gray, I.M.S., R. C. Lal, I.M.S., A. S. M. Macgregor, O.B.E., B. T. Rae, J. Rutherford.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

AT a special business meeting of the Fellows, held on December 10th, the President admitted to the licences in medicine and midwifery of the College the undermentioned candidates who had been successful at the winter final examination under the conjoint scheme with the Royal College of Surgeons in Ireland:

T. A. Caraher, W. Monnelly, Patricia O'Kane, D. L. Trant, T. Walshe.

ROYAL COLLEGE OF SURGEONS IN IRELAND.

MR. ADAMS A. M'CONNELL, M.B., B.Ch., B.A.O., F.R.C.S.I., has been appointed Professor of Surgery.

Medical News.

THE proposed pension scheme for hospital officers and nurses, to which we referred on August 14th (p. 321), has now been accepted by eighty-eight London hospitals, comprising 11,579 beds. Steps are being taken to obtain quotations from insurance companies for the various benefits contemplated. It is expected that these will have been received by the end of the first month or six weeks of next year, and that the scheme will be ready for starting shortly afterwards. A memorandum dealing with the present position of the scheme has been issued by the provisional council, and may be obtained from the printer, G. Barber, 23, Furnival Street, E.C.4.

THE Livery dinner of the Society of Apothecaries of London was held at Apothecaries' Hall on December 14th under the chairmanship of the Master, Dr. Alfred Hepburn, and was made the occasion of the presentation to Professor W. E. Dixon, M.D., F.R.S., of the first award of the Society of Apothecaries' gold medal. On the obverse of this medal is a finely moulded bust of Galen, and on the reverse Science, represented by a female figure, is shown instructing a youth in the right use of herbs; an apothecary's oven is also indicated, and the insignia of Aesculapius. The toast of the Royal Colleges was proposed by the senior warden, Dr. R. Whitesido Statham, and was acknowledged by Sir John Rose Bradford and Sir D'Arcy Power. The junior warden, Lieut.-Colonel C. T. Samman, R.A.M.C.(ret.), proposed the health of the guests, and Mr. Arthur Denman, clerk of assize for the South-Eastern Circuit, responded.

the same case, Sir K. Wood said that the vaccination of a young man of 19, who recently died about fourteen days after vaccination, was not performed with Government lymph. The case had not been reported to the Committee on Vaccination now sitting.

Crippled and Physically Defective Children.—The President of the Board of Education told Mr. R. Morrison, on December 9th, that provision is made for the education of physically defective children at special schools in 263 areas of England and Wales, and in about 140 for the treatment of crippled children by orthopaedic or similar schemes. In about 40 areas no provision had been made, and he would press local authorities to carry out their duties. In 1925 the number of children returned as physically defective within the meaning of the Education Act, 1921, was 142,889. They included those suffering from tuberculosis, and those classed as cripples or as "delicate." Of these, 25,769 attended special schools, 94,332 were at public elementary schools, and 3,857 at other institutions, while 18,931 were not attending any school. Most of the delicate children only required a relatively short period at an open-air school, while the majority of the cripples could be so far benefited by orthopaedic treatment as to make them fit to profit from instruction in ordinary schools. Lord Eustace Percy did not think the figures alarming. The country needed better ascertainment and orthopaedic treatment, but it was out of harmony with the tendency of medical opinion to suppose that all physically defective children should be taken to special schools.

Insurance Benefits.—In a reply, on December 9th, to Mr. Rhys Davies, Mr. Chamberlain said he was aware that a few approved societies in Lancashire and elsewhere were still reluctant to adopt the new scale of fees and conditions of service for dental benefit. The opposition to the new scale was, however, daily growing less as the advantages of the new arrangements drawn up by the Dental Benefit Joint Committee became more fully appreciated. The Public Dental Service Association had called the attention of dentists to a warning notice issued by the Dental Board against anything in the nature of canvassing by or on behalf of dentists with a view to securing work by an offer to accept fees below those of the new agreed scale. Mr. Chamberlain added that he saw no need to take action, as an agreement had already been reached. Answering Mr. Thurtle on the same day, Mr. Chamberlain said the money paid by way of contributions to the health insurance scheme in England and Wales for the seven years from January 1st, 1919, to December 31st, 1925, was £154,000,000. Of £143,000,000 spent on benefits in England and Wales during the same period, £86,000,000 represented amounts actually paid out to insured persons by way of benefits, and £57,000,000 the cost of medical benefit provided for them through insurance committees.

Spahlinger Treatment of Cattle.—On December 13th Mr. Hurd asked the Minister of Agriculture if his department had received a copy of the report of the Geneva State veterinary surgeons recording the success, which they stated to be beyond all hopes, of the Spahlinger tests, now completed there, with antituberculosis vaccine on cattle, and whether he contemplated any further steps to estimate the value of these reported results. Mr. Guinness replied that the Ministry's knowledge of the tests of M. Spahlinger's vaccine which had recently taken place in Switzerland was limited to accounts published in the press. In 1924 a committee was formed under the chairmanship of Commander Bayley, R.N., which included prominent agriculturists, doctors, and veterinary surgeons. This committee had formed complete plans for experimental trial of the vaccine, but was unable to obtain any vaccine from M. Spahlinger, and therefore the matter dropped. He understood that the committee was still in being, but he was unable to say whether it would be prepared again to undertake the trial of this vaccine.

Research in East Africa.—In the debate on the second reading of the Palestine and East Africa Loans (Guarantee) Bill on December 7th, Dr. Haden Guest said that the House should have more particulars concerning the proposed expenditure of £100,000 on research into native welfare. Every time railways were built or public health improved in Africa native habits were uprooted and native traditions upset. Statistics showed that from 1901 to 1921 there had been a decrease in the population of Uganda and Kenya, a slight increase in Somaliland, considerable increase in the Sudan, and a steady increase in Nigeria. Where the Government had been best the social conditions were best, and there was a steady increase in population. This bill would bring on a state of things in which the population of tropical Africa might largely increase. Mr. Ormsby-Gore said that in some areas of Africa the British had stopped the tribal wars, had broken up the old customs, but the males were doing absolutely nothing. The sooner that came to an end the better. Mr. Ormsby-Gore added that the Colonial Secretary and he would get every penny they could to promote scientific research within the Empire. He himself had found glaring instances of the shortcomings of his fellow-countrymen in research. He had to preach to very unconverted people, and would continue to do so. Research meant not merely investigation of the diseases of plants, animals, and human beings, but more fundamental research into economic and social relations. A much larger staff for research was needed. The bill was read a second time. It passed through Committee on December 9th, and through Report stage on December 10th. The bill was read a third time in the House of Commons on December 13th, and was afterwards read the first time in the House of Lords.

Experiments on Dogs.—Captain Hacking informed Sir R. Gower, on December 13th, that 1,147 dogs had been used for experimental purposes at University College, London, during 1925 and 1926. Of these, 21 were used for demonstrations before students. Section 3 of the Act laid it down that experiments for this purpose could only be performed if a certificate was given by two of the scientific authorities specified in the Act that the experiments were absolutely necessary for the due instruction of the students with a view to their acquiring physiological knowledge or knowledge which would be useful to them for saving or prolonging life or alleviating suffering. Such experiments were required to be performed under anaesthetics, and the animals must be killed before recovering consciousness. All but 28 of the total number of animals were kept under anaesthetics during the whole of the experiment and destroyed before recovering from the anaesthetic. On December 14th Captain Hacking told Sir R. Gower that since January 1st, sixteen dogs had been used for experiment at University College, and five at the Brown Institution. He could not undertake to give details of individual experiments, but the object of the experiments was in seven cases the investigation of dental diseases, in five insulin research, in four investigation of diseases of the tonsils, and in five investigation of the relation of the gall bladder to intestinal diseases. The Act required that before any experiment could be performed which involved keeping the animal alive after it recovered from the anaesthetic, a certificate must be given by two of the scientific authorities mentioned in the Act to the effect that killing the animal before it so recovered would necessarily frustrate the object of the experiment; and further, that before any such experiment was performed on a cat or dog an additional certificate must be given by two of the same scientific authorities that for specified reasons the object of the experiment would be necessarily frustrated unless it was performed on an animal similar in constitution and habits to a cat or dog and that no other animal was available for such experiment. These certificates were duly given in each of the cases mentioned above.

Notes in Brief.

A proposal for the compulsory registration of charities on the principle of the War Charities Act is being considered by an inter-departmental committee.

In 1925 five persons in the pottery trade died from lead poisoning; their average age was 58. Corresponding figures for 1924 were 18 and 52.

The Minister of Health suggests that local authorities during the first part of 1927 should abstain from proceeding under the Public Health (Preservatives in Food) Regulations where reasonable attempts had been made to dispose of old stocks of canned foodstuffs.

Of 2,000 steel houses in Scotland for which Parliament has made a special grant, 1,086 had been completed at the end of November, and 906 were building. Favourable reports had been received from tenants who had lived in steel houses both summer and winter.

The Government is considering the co-ordination of the research work carried on by or under it in this country.

The Minister of Health doubts whether there is sufficient agreement on facts or conclusions to justify the introduction of legislation making it a punishable offence to marry or convive at the marriage of any person certified as a mental defective.

The total number of applications for old age pensions received in the six months to November 1st, 1926, in England, Wales, and Scotland was 216,814.

The Foot-and-Mouth Disease Research Committee has presented a second progress report, which is being printed.

No milk is being brought from Ireland into England and Wales.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

DR. W. E. DIXON, F.R.S., has been re-elected assessor to the Regius Professor of Physic for the current academical year.

At a congregation held on December 10th the following medical degrees were conferred:

M.B., B.CHIR.—J. Holmes, E. W. P. Thomas, W. Richards.
M.B.—C. J. P. Grosvenor, C. G. Taylor.
B.CHIR.—W. S. Hunt.

UNIVERSITY OF LONDON.

THE following candidates have been approved at the examination indicated:

THIRD M.B., B.S.—*†‖A. C. Dalzell, *†L. Hartston, *†§M. Mitman, *†§G. H. Steele (*University Medal*), Dorothy R. Adams, C. E. Allen, H. Awrounin, S. C. Bakhle, J. R. Beagley, S. A. Beards, L. F. Beccle, E. H. J. Berry, Edith D. Bowie, R. J. Cann, Rose A. Carter, Evangeline A. Clark, J. S. Coleman, H. A. Cooper, A. C. Counsell, Anne A. Craig, S. S. Cruden, H. J. Davies, Muriel Davies, Doris L. Delittle, J. C. G. Dickinson, J. D. Durance, Elaine Œ. H. Earengey, D. C. Fairbairn, M. Fishman, W. Fletcher-Barrett, W. F. Gaisford, S. C. Gawne, P. L. Goitein, Minnie Gosden, C. R. M. Greenfield, J. I. Griffiths, R. D. Gross, L. W. Hale, J. G. Hamilton, K. P. Hare, R. B. Hawes, W. E. Heath, Frances M. Heaton, J. C. Hewetson, N. G. Hill, F. D. M. Hocking, D. P. Holmes, B. B. Hosford, D. V. Hubble, Amelia M. Ison, C. James, H. N. James, Iorwerth H. Jones, R. O. Jones, Isabel M. Jordan, Gladys Kay, Greta M. Langdon, R. H. Leigh, R. H. Little, G. K. Loveday, Elsie

Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to ***The EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.***

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QUERIES AND ANSWERS.

CARBON DIOXIDE IN RESPIRABLE AIR.

"RESPIRATORIUS" asks for information about the percentage of carbon dioxide in air which can be breathed without apparent harm—as, for example, in submarines.

PTYALISM.

DR. W. ERLE FARNHAM (Birmingham) asks for suggestions for the treatment of a man, aged 51, suffering from salivation to such an extent that when the mouth is opened saliva pours out. There is no dental sepsis or any other obvious cause.

ULTRA-VIOLET LIGHT IN RAYNAUD'S DISEASE.

THE question Dr. Sidney Matthews (Crawley) desired to put was misunderstood (p. 1087). He wished to know whether ultra-violet light had been used in the treatment of Raynaud's disease. He has a case of the second degree under his treatment at the present time, but has not advised ultra-violet treatment.

PUS CELLS IN URINE.

"A. R. E." writes: Is the presence of a few pus cells in the urine significant of very much? I have a patient in whose urine there are some pus cells and epithelial debris; clinically there is nothing at all the matter with my patient beyond a little dental trouble, with, possibly, the existence of a focus or two of pus at the roots of old stumps, which are being cleared out.

THE DETERMINATION OF SEX.

DR. A. J. COLBY TINGEY (Hastings) writes: Dr. McConnell Boyce (November 13th, p. 918) gives his opinion that when conception takes place prior to a menstrual period a male child results, and a female when conception is after a period. It is rather remarkable that Mrs. Monteith Erskine as a result of her observations should have arrived at exactly the opposite conclusion—namely, normal male conceptions occur between the eighth and fifteenth day counting from the very beginning of the period, and female conceptions from twenty-first to twenty-eighth day (see *Sex at Choice*, Chap. IX and XI). It is not my intention to recapitulate Mrs. Erskine's arguments because they are accessible to the medical profession and the general public. I should, however, like to submit two propositions: either (*a*) one of the above-mentioned observers must be mistaken, or (*b*) the riddle of sex is still unsolved.

DR. H. W. EVANS (Brundall, Norwich) writes: I can endorse Dr. Boyce's opinion that conception immediately preceding a menstrual period results in a male child. A patient of mine, having three daughters and desiring a son, took precautions that insemination only occurred during this time. His care was rewarded by the birth of a boy. As Dr. Boyce says, it is a fact worth knowing, and, though I can only quote this one case, I think it worth recording in support of his theory.

TREATMENT OF LEUCODERMA.

DR. RAWEL CHAND SURI (Rawalpindi) writes with reference to the inquiry by Dr. D. S. Puttanna (July 31st, p. 235) about treatment of a girl, aged 7, suffering from patches of leucoderma on the face and extremities. Dr. Suri suggests that iodine liniment should be painted twice a day on the spots, and thinks this is effective in about a week's time in early cases. Persistent and deep infections may be treated with a saturated solution of sodium thiosulphate.

TINNITUS IN MÉNIÈRE'S DISEASE.

MR. F. PEARCE STURM, M.Ch. (Ear and Throat Clinic, Leigh, Lancashire), writes: Ménière's disease is a generic term which conveys no definite information. If "H. S." (BRITISH MEDICAL JOURNAL, November 27th, p. 1027) is sure that his patient's tinnitus is not tubo-tympanic, oto-sclerotic, nor retro-labyrinthine in origin, he should try half-grain doses of quinine sulphate thrice daily for a month, and if these fail, 5-grain doses of sodium salicylate as frequently for the same period. Both of these drugs have lulled labyrinthine tinnitus. No case, whatever its apparent background, should be regarded as hopeless until the tubes have been investigated by the electric endoscope of Holmes and dilated by the Eustachian bougies. True organic stricture of the Eustachian tube is so rare as to be a curiosity, but catarrhal hyperplasia (non-organic stricture) is not only common but frequently overlooked, and may cause a high degree of deafness, vertigo, tinnitus, even spontaneous nystagmus—in fact, all the symptoms of Ménière's complex except the vomiting. It may be cured by a correct Eustachian catheter technique. The drugs mentioned by "H. S." are of value only where tinnitus depends upon systemic blood pressure abnormalities. In every case of the so-called Ménière's disease there is the possibility of a tumour of the nervus acusticus in or near the porus internus.

DR. A. BETTS TAPLIN (Liverpool) writes in reply to "H. T." regarding nervous retching, also to "H. S." with reference to tinnitus in Ménière's disease, to say that both these troubles can be successfully dealt with by a course of suggestive treatment.

"D. M." writes in reply to "H. S.": As a personal sufferer I have found Dr. Dan McKenzie's paragraphs on treatment in his *Diseases of the Throat, Nose, and Ear* most helpful. He divides all cases into three groups: (1) those with high blood pressure; (2) those with low blood pressure; (3) toxic cases. For the second group, in which I classed myself with a moderate blood pressure, he advises extractum ergot liq. 20 minims three times a day. Since I started this treatment I have undoubtedly had more freedom from the noises in the ear, as well as from the sensation of not far distant giddiness. At present I am taking 3-grain tabloids, sometimes two in the morning and one three times a day and variably. I am satisfied that sodium bromide, which used to help me in 1909 at the age of 34, does not now do so, but increases the tendency to giddiness.

INCOME TAX.

Motor Car Transactions.

"MOTORS" has owned and used two cars for over six years. Car A was bought in 1920 for £775 and sold in 1926 for £70, a second-hand car being bought for £615; car B was bought in 1920 for £632 and is still in use.

*** It has to be borne in mind that, apart from the "depreciation" allowance, there is no income tax allowance for lost capital as such; the deduction that can be claimed is for the out-of-pocket cost of replacement. When car A was replaced the actual amount expended was £615 – £70 = £545, and "Motors" cannot legally deduct more. So far as car B is concerned the authorities are strictly correct in computing the loss by wear and tear during the year according to the value of the car at the beginning of that year. Our correspondent should remember that when car B is replaced he can claim the "obsolescence" allowance, calculating it at the net cost of replacement less the amount of the depreciation allowances he has actually received in respect of that car. When that allowance has been claimed in due course the disparity between the total loss of capital and the total amount allowed for tax purposes will not be so serious as it seems to be at present. The forthcoming change from the three years' average will apparently work adversely, but perhaps our correspondent would like to send us the figures when preparing his 1927–28 return; in that case he should state the date in each year at which he closes his accounts.

LETTERS, NOTES, ETC.

A MEDICAL ASPECT OF MINERS' SHORTER HOURS.

DR. NOEL H. M. BURKE (Orpington) writes: Does not Dr. Bushnell's interpretation of figures (December 11th, p. 1145) contain a fallacy? He argues in terms of accidents per 100,000 miners employed to show that reduction of hours leads to reduction of accidents. If 100,000 men work for seven hours a day there are 100,000 fewer man-hours of exposure to risk of accident than when eight hours are worked. This time factor should be allowed for.

SEBACEOUS CYSTS: A POINT IN DIAGNOSIS.

MR. A. P. BERTWISTLÆ, M.B., F.R.C.S.Ed., writes to draw attention to the peculiar sudden blanching of the field of operation when the wall of a sebaceous cyst is properly injected with adrenaline-novocain solution. "As I have never known it to occur with dermoids (or lipomata), it is a point in differential diagnosis, when both cysts may occur, such as at the angles of parietal bone and orbit, or in the neck, where dermoids of thyroglossal or branchial origin may be encountered. Incidentally such blanching is of the greatest service in localizing the injection and rendering the field anaesthetic."

THE Prince of Wales presided, on December 14th, at the distribution meeting of the general council of King Edward's Hospital Fund for London. It was announced that the sum for distribution was £284,750, including a special grant of £39,750 from the Wells estate. Further particulars will appear in a later issue.

THE house and library of the Royal Society of Medicine will be closed from Thursday, December 23rd, to Tuesday, December 28th, both days inclusive.

THE Royal Society of Medicine will hold its next social evening at 1, Wimpole Street, Cavendish Square, on Monday, January 17th. At 8.30 p.m. the guests will be received by the President and Lady Berry, and at 9.30 Professor A. W. Sheen, C.B.E., M.S., will give a short address, entitled "Medicine in Ancient Greece," with lantern illustrations. The library will be open, and various objects of interest will be exhibited. Music and light refreshments.

THE Fellowship of Medicine announces that from January 10th to 22nd the Prince of Wales's General Hospital will hold an intensive course in medicine, surgery, and the specialties. A fortnight's course in diseases of children by the Royal Free Hospital and the Children's Clinic will start on January 10th. From January 11th to February 5th there will be a series of lecture demonstrations on psychological medicine, on Tuesdays and Saturdays, at 11 a.m., at the Bethlem Royal Hospital. From January 17th to 29th an intensive course in cardiology (limited to 20) will be held at the National Hospital for Diseases of the Heart. Courses in practical obstetrics can be arranged at Queen Charlotte's Hospital to last two weeks or a month. Each week the City of London Maternity Hospital holds a course in obstetrics and child welfare, personal application for which must be made to the office of the Fellowship of Medicine. The Fellowship can also arrange for clinical assistantships at the Samaritan Hospital. The series of lectures on emergencies in medicine and surgery will be continued from January 27th; demonstrations in clinical surgery and ophthalmology will also be resumed in January. Copies of all syllabuses of the special courses and the programme of the general course of work can be obtained from the Secretary of the Fellowship, 1, Wimpole Street, W.1.

A DISCUSSION on the inebriate woman will be opened by Commissioner Adelaide Cox, C.B.E., of the Women's Social Service Department of the Salvation Army, at the meeting of the Society for the Study of Inebriety to be held at 11, Chandos Street, Cavendish Square, W., on Tuesday, January 11th, at 4 p.m.

TWO sets of post-graduate courses have been arranged at the Royal Northern Hospital, Holloway Road, N. 7. The first course is open to all medical practitioners free of charge, and will consist of weekly lectures or demonstrations by members of the staff on Tuesdays, at 3.15 p.m., commencing January 4th, 1927, and intensive courses, each of one week's duration, to be held in February, May, and October. The second course on recent advances in medicine is suitable for the M.R.C.P. and other higher examinations. Full particulars can be obtained on application to Dr. E. G. B. Calvert, Dean, Royal Northern Hospital, Holloway Road, N.7.

THE Old Epsomian Club held its forty-seventh annual meeting and dinner on December 9th at the Trocadero Restaurant, the President, Mr. H. A. T. Fairbank, in the chair. In reply to the toast, "Floreat Epsomia," proposed by him, the headmaster gave an account of the successes of the College during the year in all departments. He referred particularly to the success in obtaining guarantors and subscribers towards the £3,000 required to build a new cricket pavilion. The toast of "The Visitors" was proposed by the Right Hon. Sir H. J. Mackinder in a humorous speech, and Dr. G. E. Waugh, proposing the health of the chairman, referred particularly to Mr. Fairbank's distinguished services during the war.

THE seventh Latin-American Medical Congress will be held at Mexico on March 15th, 1927.

THE Papworth Press, Cambridge, announces the forthcoming publication of *The Significance of Temperature Variations in Tuberculous Disease*, which is, to quote the sub-title, "a study in continuous and quasi-continuous temperature records of man and animals in health and disease." This is a reissue of papers by the late Sir German Sims Woodhead and Dr. P. C. Varrier-Jones, together with the results of Dr. Varrier-Jones's further experiences at Papworth. It has been printed and bound, and will be published by, the consumptive ex-patients in the printing department of the Papworth Village Settlement.

LORD D'ABERNON, G.C.M.G., has accepted the chairmanship of the Industrial Fatigue Research Board, to which he has been appointed by the Medical Research Council. Mr. William Graham, M.P., has relinquished the chairmanship under the pressure of other public work, but will remain a member.

THE Canadian Department of Health at Ottawa has issued in pamphlet form a list of the public, private, and Red Cross hospitals of Canada. The institutions are arranged according to the various provinces, and the number of general and maternity beds is given in each case. A map of the Dominion is appended showing the distribution of hospitals in each province. Copies of the pamphlet are obtainable from the department.

THE Bureau of the Far East at Singapore reports that during the week ending October 30th there were 9 cases of plague with 5 deaths, 6 cases of cholera with 2 deaths, and 33 cases of small-pox with 5 deaths; during the week ending November 6th there were 18 cases of plague with 10 deaths, 32 cases of cholera with 22 deaths, and 26 cases of small-pox with 6 deaths; and during the week ending November 13th 76 cases of cholera with 38 deaths and 26 cases of small-pox with 6 deaths.

THE centenary of the Ludwig Maximilian University at Munich, which counted among its members Liebig, Pettenkofer, and Röntgen, was celebrated last month.

UNDER the will of the late Mr. George Paterson Walker the Kilmarnock Infirmary received £2,000. The late Captain Athelstane Robert Price has bequeathed £1,000 each to the Royal Salop Infirmary and to the Shrewsbury Eye, Ear, and Throat Hospital for Shropshire and Wales.

THAT small-pox is still occasionally as virulent as ever is shown by the fact that out of 1,908 cases at Rio de Janeiro from January 1st to August 14th 945 died—a mortality of 44.2 per cent.

THE Health Organization of the League of Nations has published in two volumes the Public Health Code of the Kingdom of Belgium, printed throughout in French. The first volume, of 388 pages, comprises the laws and regulations concerning hygiene and public health, the second, of 132 pages, those relating to the practice of medicine.

PROFESSOR GALLEMAERTS of Brussels has been nominated president for 1927 of the Royal Academy of Medicine of Belgium, with Professors Léon Frédéricq and Malvoz of Liège as vice-presidents.

BY a recent enactment the use of alcoholic liquors has been forbidden to persons under 18 years of age in all the colleges and educational establishments throughout Italy.

DR. CHAGAS, professor at the faculty of medicine of Rio de Janeiro, and Dr. Medin, professor at the faculty of medicine of Stockholm, have recently been made doctors *honoris causa* of the Paris faculty of medicine.

THE first congress of the Latin medical press, which was to have been held at Paris in October, has been postponed to April. The chairman of the executive committee is Dr. M. Loeper, president of the Association of the French Medical Press. Further information can be obtained from the general secretary, Dr. L. M. Pierra, 12 Rue de Babylone, Paris VII[e].

THE subjects to be discussed at the eighteenth congress of the Italian Society of Psychiatry, which is to be held at Trent next year, will include endocranial tension and its relation to neuroses and psychoses, changes in the structure of the cortical cells in mental disease, and the civil capacity of mental patients and abnormal persons according to present legislation.

IN reply to a request for information from the Union of School Hygiene Societies of Japan the London Education Committee has expressed its opinion that it would be advantageous if the International Congress of School Hygiene were revived and arrangements made for a meeting at as early a date as practicable. The congress has met four times since 1904; arrangements made for a fifth meeting in Brussels in 1916 were broken off on account of the war.

WE have received a copy of *Boletin del Departamento de Salubridad Pública*, a quarterly publication issued by the Mexican Department of Public Health. In addition to an account of the work of the department and the various services under its control, the bulletin contains statistics of deaths from all causes in the City of Mexico, with separate tables for infectious diseases and the causes of intrauterine death.

UNDER the title *Dust of Gold* an account of the work of the Church of England Zenana Missionary Society among the blind and deaf of India, China, and Ceylon has been written by Mrs. M. E. Hume Griffith. A list is given of five schools for the deaf and blind which are supported by the society, and accommodate 489 children. The booklet is well illustrated, and may be obtained from the society, 27, Chancery Lane, W.C.2, price 1s.

WE have received the twelfth and thirteenth volumes of the *Archivio Italiano di Chirurgia*, which contain eighty papers on various subjects of surgical interest, dedicated to the Senator Professor Antonio Carle of Turin by his friends and pupils in commemoration of his thirty years of teaching.